MAY, 1952

Railway Engineering and Maintenance

He doesn't use this wrench much anymore!

with RELIANCE HY-PRESSURE HY-CROME *spring washers on the job!*

IN SPITE of heavy wheel loads and high speeds, your track joint bolts will stay tighter longer reducing time between maintenance periods.

Less maintenance when Reliance Hy-Pressure Hy-Crome Spring Washers are used on rail joint bolts. The result will be a savings in time and cost and an easing up of tight maintenance schedules.

Reliance Hy-Pressure Hy-Crome Spring Washers have been designed so that the automatic mechanical action of the helical coil spring washer will flatten at a predetermined applied load. They are manufactured from alloy spring steel to provide adequate reactive pressure and a wide range of reaction to compensate for looseness as a result of service wear.

Our railroad fastening engineers will be pleased to submit samples and engineering data on Reliance Hy-Pressure Hy-Crome Spring Washers for a test application on your track.

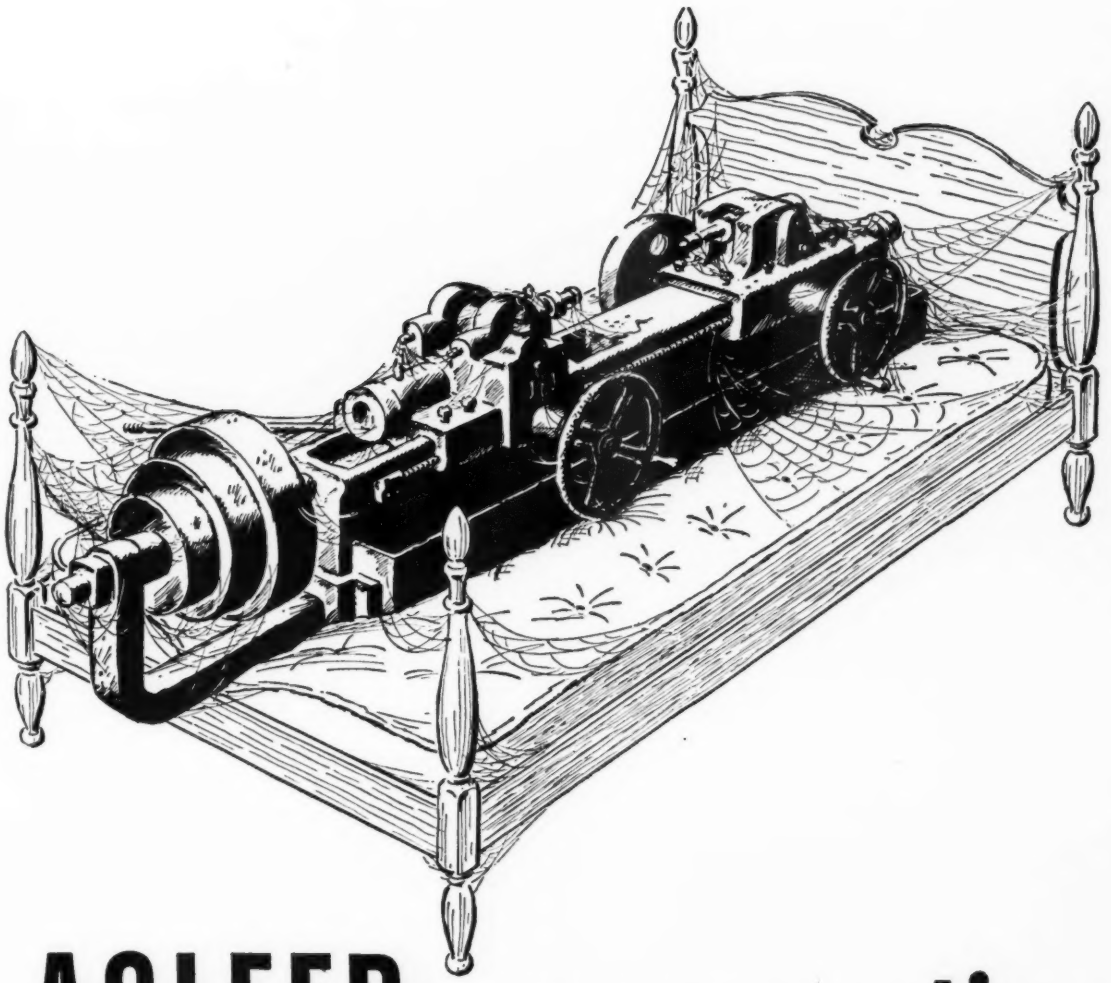
"Edgemark of Quality"

EATON

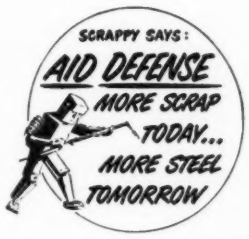
MANUFACTURING COMPANY, RELIANCE DIVISION

OFFICE AND PLANTS • MASSILLON, OHIO

SALES OFFICES: NEW YORK • CLEVELAND • DETROIT • CHICAGO • ST. LOUIS
SAN FRANCISCO • MONTREAL



ASLEEP...on your time



An obsolete or worn-out machine, stuck away, sleeping and forgotten in a corner of your plant, is costly.

It is not doing you or anyone else any good. It is taking up valuable space.

Call in a scrap dealer and let him haul away your dormant scrap. It will help to supply the tons of additional scrap that is needed if the country's steel furnaces are going to continue working at full capacity.

Today there are millions of tons of dormant scrap hidden away in plants and factories, and on farms.

If the steel mills can get that scrap, the steel supply picture will be very much brighter, with more steel for everybody. Call in a scrap dealer today!

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

More Scrap Today...More Steel Tomorrow

Published monthly by Simmons-Boardman Publishing Corporation, 79 W. Monroe St., Chicago 3, Ill. Subscription price: United States and Possessions, and Canada, one year $2.00 (special rate to railroad employees only, one year $1.00). Single copies 50 cents. Entered as second-class matter January 20, 1933, at the post office at Chicago, Ill., under the act of March 3, 1879, with additional entry at Bristol, Conn. Volume 48, No. 5.

RUST-OLEUM

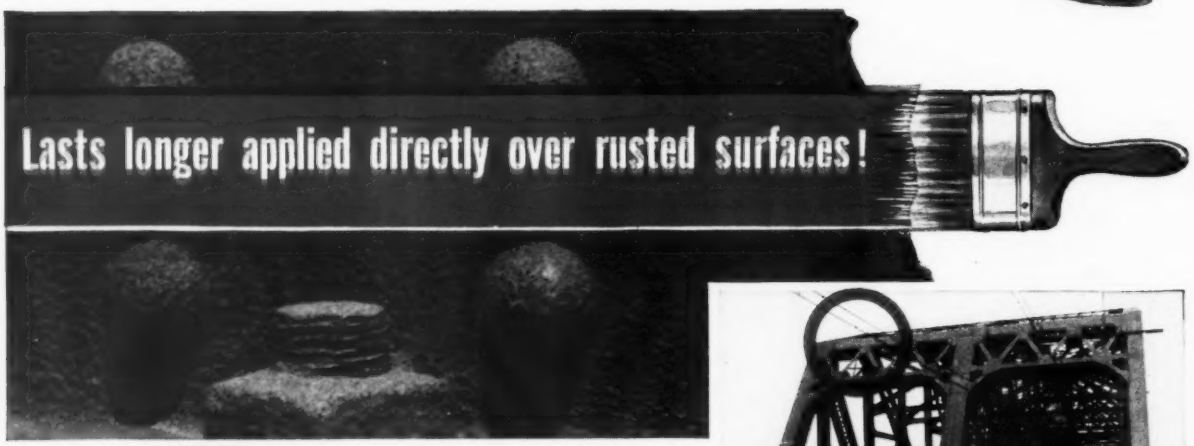
STOPS RUST!

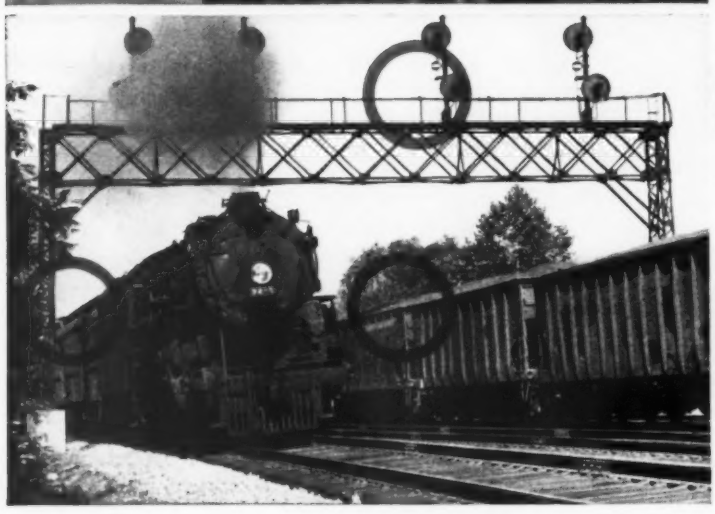
Cut Your Maintenance Costs On Signalling Equipment, Rolling Stock, Bridges, Towers, Tanks, etc.

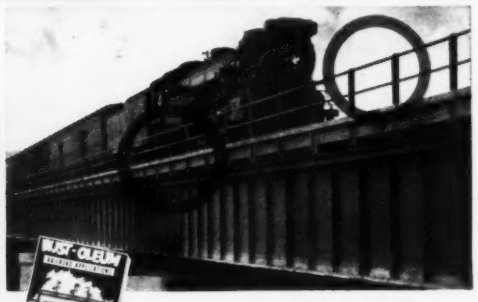
Here's the *practical, sensible* answer to your rust problems! Costly sandblasting or chemical precleaning are not usually required . . . just wire-brush and scrape to remove rust scale and loose particles . . . then apply RUST-OLEUM by brush, dip, or spray over the rusted surface. Dries to a tough, elastic, rust-resisting film that lasts longer applied over rusted areas. So easy to use that one man often does the work of two . . . saves you time, labor, and money. Get the complete story from your RUST-OLEUM Rust Preventive Railroad Specialist today!

RUST-OLEUM CORPORATION
2549 Oakton Street, Evanston, Ill.

Available In All Colors, Aluminum and White





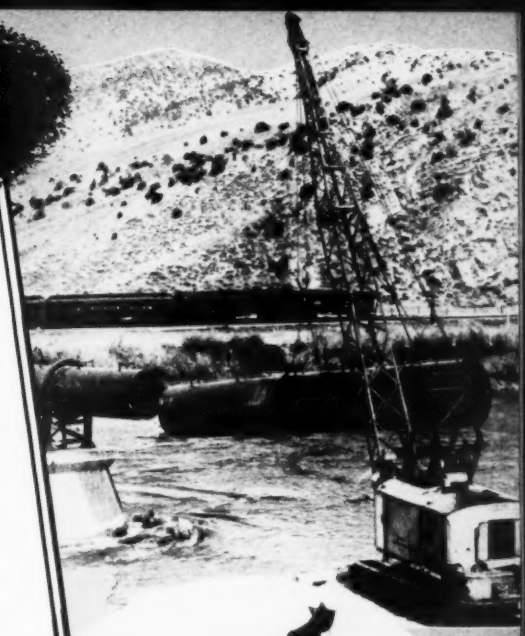


Request Your FREE Copy of The RUST-OLEUM Railroad Catalog Now!

where

SMOOTH HANDLING

is a requirement!



REAL smoothness of handling knocks minutes off every job. It is when you are up against the tricky jobs that you find out what crane performance really means. When you're setting rail or balancing 50 ft. of 60 in. pipe to shove it into the next section, holding bridge steel or stone for the setters, or swinging a steam hammer over the sheeting — that's when you find out what smoothness of operation means.

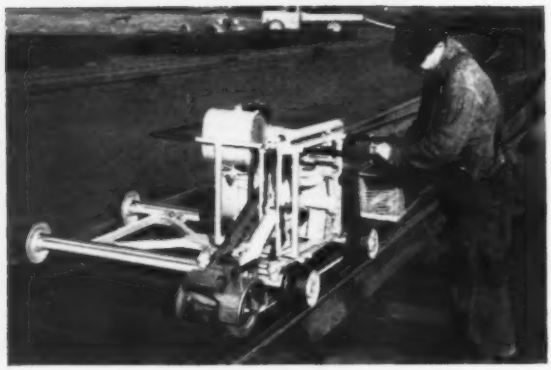
The Northwest "Feather-Touch" Clutch Control gives easier operation with freedom from the complications of delicate parts such as pumps, valves, compressors and tubing. Uniform Pressure Swing Clutches give smooth swing, reduce the danger of whipping and give increased accuracy in setting. Throttle control permits minute movements in handling the load and there is a Northwest Boom Hoist to fill every operating requirement. These Northwest advantages mean time saved on the job and greater safety for the setters. Why not plan to have a Northwest? Talk to a Northwest Man. It will pay you to place an order.

NORTHWEST ENGINEERING COMPANY
1513 Field Building, 135 South LaSalle Street
Chicago 3, Illinois

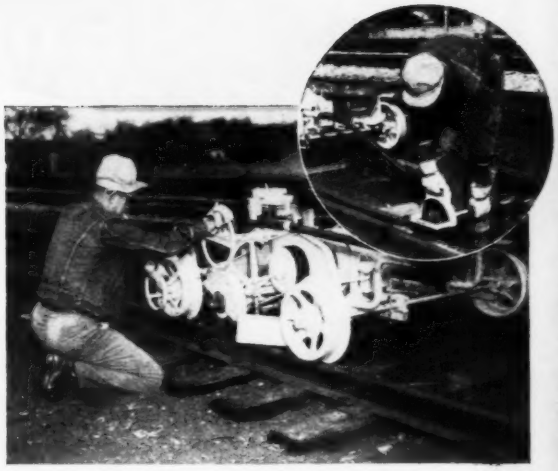
NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE

DOES THINGS NO TRACK-TYPE RIG CAN DO



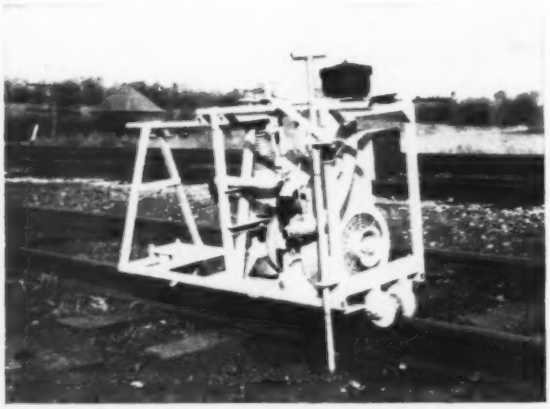
FLEXIBLE ARM GRINDER, grinding switchpoint. With various types of grinding wheels this grinder is also used for rail end slotting, undercutting stockrails, grinding frogs, etc. A fast cutting grinder with big production capacity.



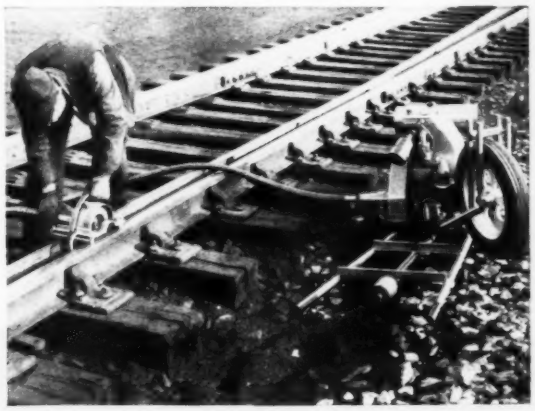
HEAVY-DUTY RAIL GRINDER, grinding a rail joint. Recommended where speed, output and accurate surface grinding are desired. With accessories, it can be used for slotting rail ends, grinding switchpoints, and flangeway grinding at frogs and crossings. (See inset, above)

Let these NORDBERG *"Mechanical Muscles"* handle *ALL* of your GRINDING JOBS...

MIDGET GRINDER, a one-man cup wheel grinder for surface grinding welded joints, removing mill tolerance and equalizing cropped rails. Specially applicable in congested traffic areas.



UTILITY GRINDER, removing flow from switchpoints and stockrails. With other Nordberg accessories, it can be used for surface grinding, rail end slotting, frog grinding, etc. Particularly suited for congested traffic areas.



Use NORDBERG *"Mechanical Muscles"* to do a Better, Faster Maintenance Job at Lower Cost . . .

R652

FOR reconditioning rail, switches, frogs and crossings, Nordberg offers four different grinders for fast, low cost maintenance grinding. From these four Nordberg Grinders you can select the type best adapted to meet your individual requirements.

Write for literature on the types of Nordberg grinders in which you are interested.

ADZING MACHINE • CRIBEX* • BALLASTEX* • SCREENEX* • GANDY* • POWER JACK • POWER WRENCH • RAIL DRILL • RAIL GRINDERS • SPIKE PULLER • TRAKGAGER • TRACK SHIFTER • DSL YARD CLEANER

*TRADEMARK

NORDBERG MFG. CO., *Milwaukee, Wis.*

NORDBERG MACHINERY

Versatile off-track power on the D. & R. G. W.

Just west of the Moffat Tunnel, on the main line of the Denver & Rio Grande Western Railroad, lies the tiny junction town of Bond, Colorado. There is a roundhouse and depot, a cafe, a hotel and a few houses. All the electric power for this remote community is generated by a pair of steady-running "Caterpillar" D13000 Diesel Electric Sets.

A few miles from Bond, you can see another railroad-owned "Cat" Diesel Engine at work. It's a D318, powering a Bucyrus-Erie dragline with a one-yard bucket, used for clearing fallen rock and earth and dumping it on the lower side of the right of way.

These are typical of the many off-track jobs done economically by "Caterpillar" units. And these versatile engines are equally at home on the rails, in yard and main line locomotives. The 44-tonners, powered by "Caterpillar" D17000 Engines, have set high records of availability. Today locomotives as large as 2000 hp. can be equipped with this dependable power, for "Cat" Diesel Engines up to 500 hp. are available.

In these times when all equipment must last longer, your "Caterpillar" Dealer will gladly help you plan a sound maintenance program that will add to the long life of the road's "Caterpillar" equipment.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

Railroad Diesels

The CF&I End-Hardening Process is automatic. The passage of the rails through the successive heats and final air-quench is electrically timed and thermostatically controlled through this panel.

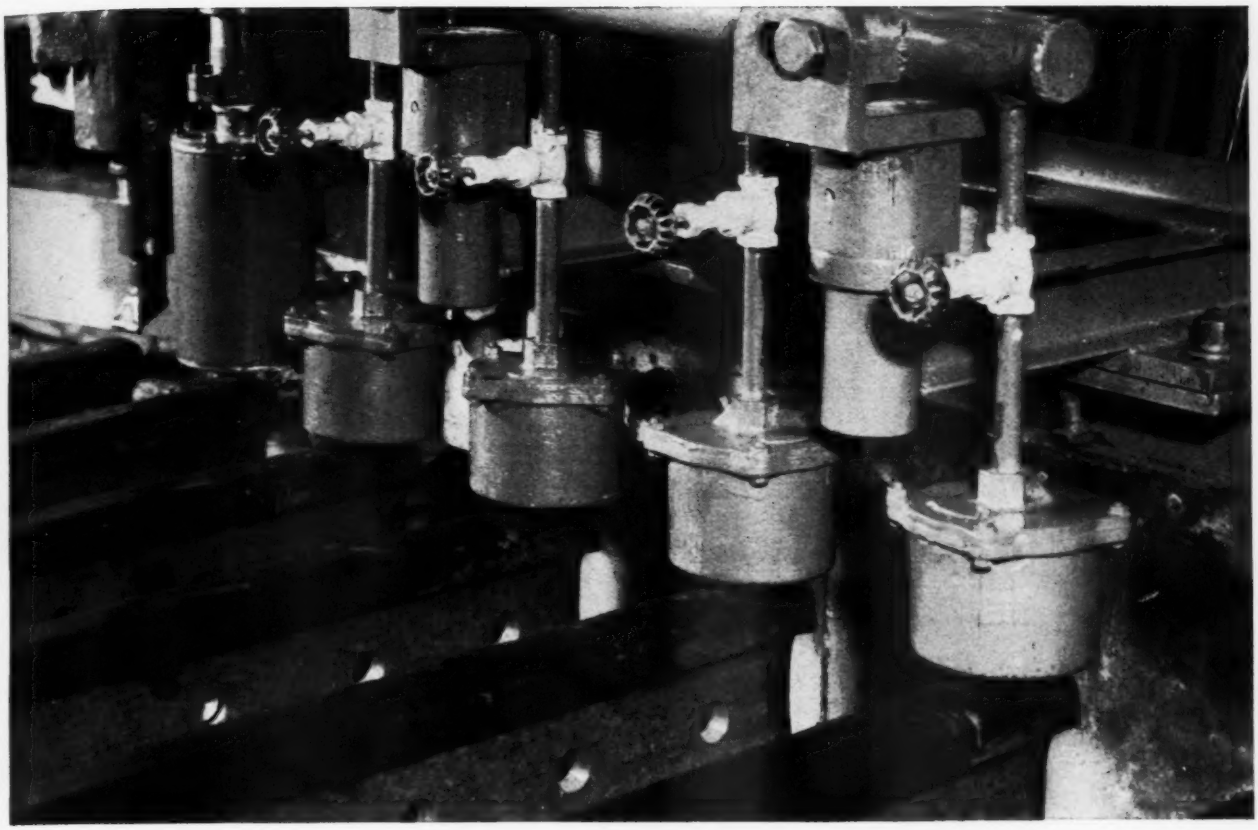
CF&I

END-HARDENED

As a service to Western Railroads CF&I end-hardening facilities eliminate:

- **Guesswork in End-Hardening**
- **Haphazard Rail End Patterns**
- **Damaging of Rail Ends before End-Hardening**

The Western Railroads' progressive attitude is complemented by another CF&I development.



Precision equipment, consisting of successive radiant heating units and a compressed air-quench, treats both rail ends simultaneously. The heating units raise the temperature to the required degree. The quench imparts the desired Brinell hardness.

RAILS for Western Roads

By pioneering mill end-hardened rails in the West, CF&I offers:

- Uniformly End-Hardened Rails
- Proper Location and Hardness of Treated Zone
- Lengthened Rail Life

You are cordially invited to inspect our new facilities and the results obtained.

RAILS & FASTENINGS

THE COLORADO FUEL AND IRON CORPORATION

DENVER, COLORADO

CF&I

Make construction last . . . build with Penta -PROTECTED wood!

with clean

Penta*-PROTECTED WOOD

You build for safety and minimum maintenance for the present AND the future when you use PENTA-PROTECTED wood for bridges, poles and car lumber.

Wood treated with PENTA resists decay and termites—lasts many times longer than untreated wood! PENTA also leaves wood clean, easy to handle, and paintable when properly treated. PENTA will not leach.

PENTA gives dependable protection on railroad car lumber, crossings, platforms and buildings. For more information on how PENTA can help you build for tomorrow, write to Dow, Dept. PE-87.

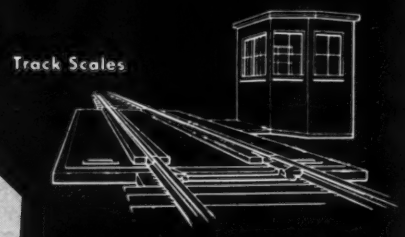
*PENTA is a popular abbreviation of the name of the chemical, PENTAchlorophenol.

THE DOW CHEMICAL COMPANY · *Midland, Michigan*

DOW

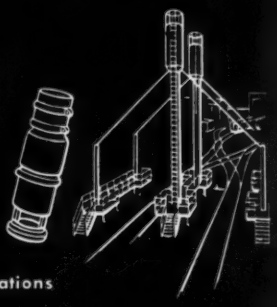
Penta

chlorophenol

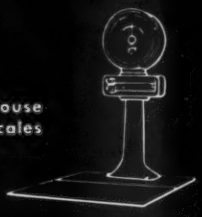


Track Scales

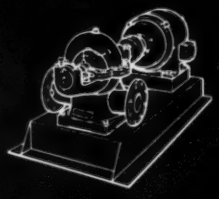
Turbine Pumps



Sanding Stations



Warehouse Scales



Centrifugal Pumps

Sign of Lower Cost Railroading . . .

In the Fairbanks-Morse line there are almost unlimited opportunities to cut costs in every phase of railroad operation and maintenance.

Rail cars . . . scales . . . sanding stations . . . pumps . . . motors . . . off-track lighting and power equipment . . . a range of sizes and types, each with a background of proved long-time, low-cost performance for railroads everywhere—that's the Fairbanks-Morse line.

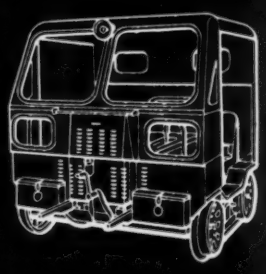
Every Fairbanks-Morse branch office is staffed with railroad equipment experts. Call on them, or write Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE,

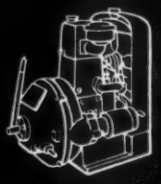
a name worth remembering

RAILROAD EQUIPMENT • RAIL CARS • PUMPS • SCALES • ELECTRICAL MACHINERY • DIESEL AND DUAL FUEL ENGINES DIESEL LOCOMOTIVES • MAGNETOS

Portable Dial Scales



Rail Cars



Generating Sets

Township Thanks Railroad

The Fairport, Painesville & Eastern Railroad Company received the following letter from the Board of Trustees of Painesville Township, Ohio:

Gentlemen:

The attention of the Board of Trustees of Painesville Township has been called to the condition of the various railroad crossings in Painesville Township. Their inspection has resulted in a motion passed by the Painesville Township Trustees at their meeting Sept. 13, 1951, formally instructing the Clerk to write a letter to the officials of the Fairport, Painesville & Eastern Railroad, thanking them for their efforts to keep their crossings improved and in safe condition for traffic. Your cooperation merits the appreciation which this letter tries to convey to the officials and others responsible.

Respectfully yours,
Philip W. Baker
Clerk

FOR KOPPERS PANEL CROSSINGS

The F. P. & E. R.R. Co. wrote us that " . . . all of the crossings referred to were supplied by Koppers. In March, 1948, we purchased our first Koppers Pressure-Creosoted Panel Grade Crossings and subsequently have purchased 15 more. All of these crossings are giving us excellent service. That they are equally satisfactory to the public agencies responsible for road conditions is indicated by the letter from the Township Trustees."

Koppers Creosoted Grade Crossings are made to last. The panel method of construction offers easy installation. Completely assembled individual panels are securely fastened to withstand vibration, swelling or shrinking of the wood. When the track is worked, the crossings may be removed and replaced, using all the original material.

Write for a copy of the new folder on KOPPERS GRADE CROSSINGS. It contains construction details and technical data on crossings that not only save money but also earn public applause for doing a good job.

KOPPERS COMPANY, INC. · Pittsburgh 19, Pa.

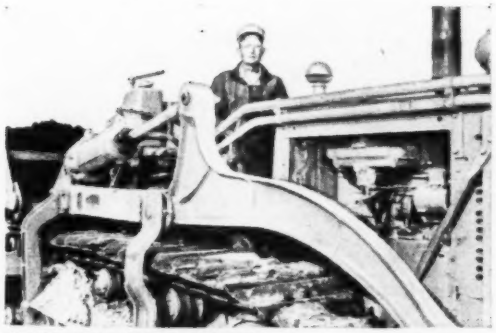
KOPPERS PRESSURE-TREATED WOOD

For additional information, use postcard, pages 463-464

Highballing on the MP

HIGHBALL FOR "THE EAGLE." International TD-14A operator gives the train crew a wave as the "pride of the line" sweeps by.

International power helps the Missouri Pacific deliver a smoother ride for passengers and freight in MP's continuous program of line improvements and year-round maintenance



"EASY RIDING TRACTOR," says operator C. J. Miller.

PROGRAM OF LINE IMPROVEMENTS along tracks of the International Great Northern, MP's Texas subsidiary, call for improved embankments, replacement of 90-pound rail with 115-pound rail.

All through the southwest, the progressive Missouri Pacific sets the pace for modern high speed railroad operations.

This calls for a continuous program of line improvements and year-round maintenance, to combine speed with a smooth ride for passengers and freight.

That's where International power comes in. And the MP not only gets faster maintenance at lower cost—they get employee satisfaction, too. Listen:

"I've been a dozer operator for the MP for eight years." says C. J. Miller. *"I like the way this TD-14A handles—whipping around a telephone pole, or holding a steady line just inches away from the tracks. In this work, you have to be able to look where you're going and go where you're looking. With the TD-14A, you've really got it made!"*

Why don't you find out what International power can do for you? See your International Industrial Distributor for details.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL

INTERNATIONAL HARVESTER

POWER THAT PAYS

Ribbonrail Service...

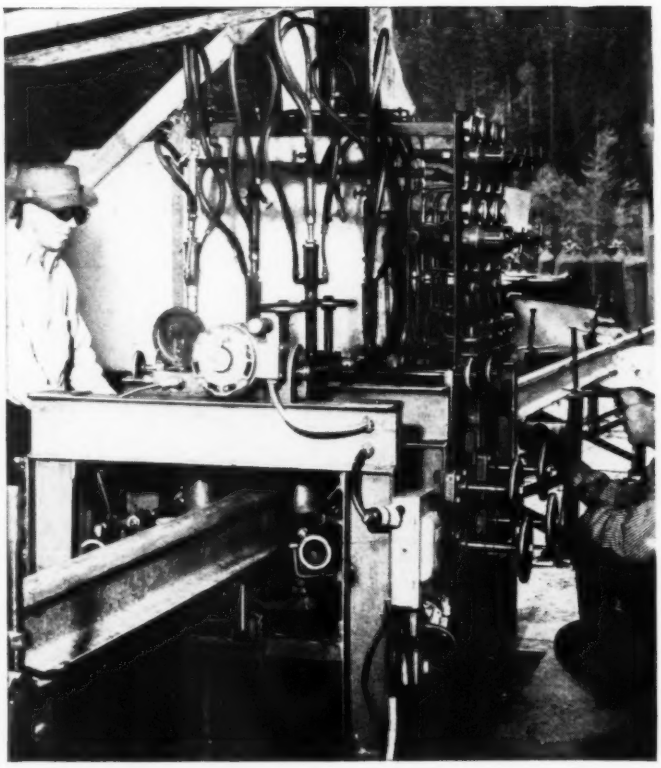
IN YOUR USED RAIL PROGRAM

Will Save You Money

It's poor economy to re-drill cropped rail for re-use in secondary or yard track. When you do that you end up with 300 or more joints per mile — joints that multiply maintenance expense.

Many railroads are cutting maintenance costs by using OXWELD'S RIBBONRAIL Service and equipment to make used rail into continuous welded rail — for use in secondary locations. The multiple lengths save you money. Here's how:

Put your used rail into a RIBBONRAIL Service program and save money. Ask OXWELD for more information.



RIBBONRAIL Service at work — an OXWELD pressure-welding machine quickly produces continuous rail.

Cropping battered ends of used rail prepares the rail for welding . . . the same equipment used for new rail performs this operation.

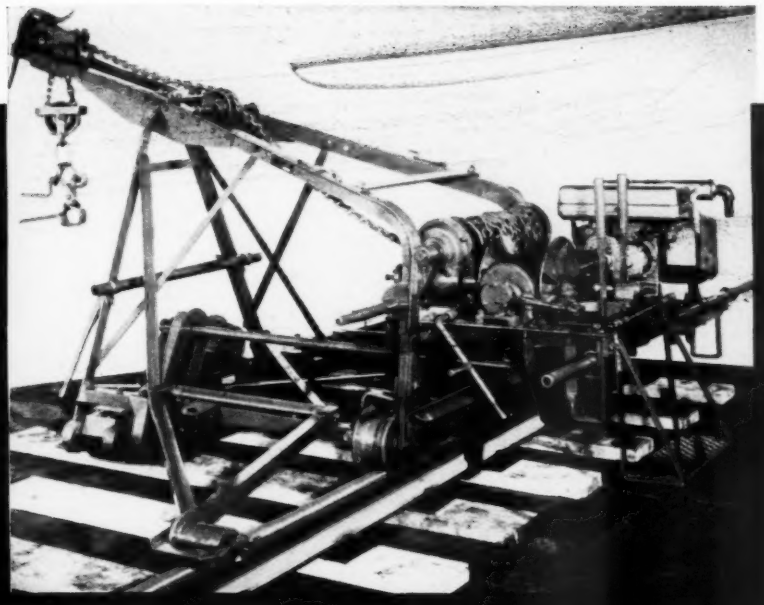
The cropped rail ends are welcome in the scrap drive . . . You help the national defense effort, and get a premium price for the scrap.

RIBBONRAIL needs no joint maintenance since there are no joints.

Used rail lasts longer when it becomes RIBBONRAIL . . . there are no ends to batter, no joints to wear.

OXWELD RAILROAD SERVICE COMPANY
A Division of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto

"Ribbonrail" is a service mark, and "Oxweld" is a trade-mark of Union Carbide and Carbon Corporation.

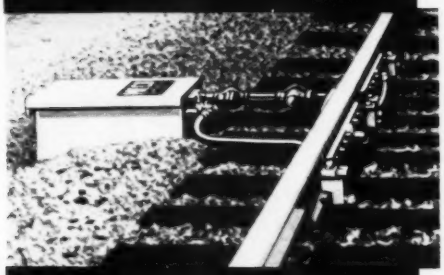


for Every Rail Laying Job!

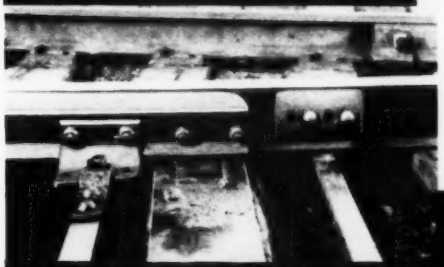
The MECO *Rail Layer* is being used to speed up every type of rail laying job.

One MECO and 3 or 4 men lay modern, conventional-length rails.
Two MECOS and 5 men lay 78 foot rails.
Two or *More* MECOS and 10 or more men lay mile-long "RIBBONRAIL".

MECO Rail Layers are comparatively low in cost, light in weight, and the Set-Off and Transfer Device makes it easy to transfer the MECO from one rail to the other or to set the Rail Layer off to clear traffic.



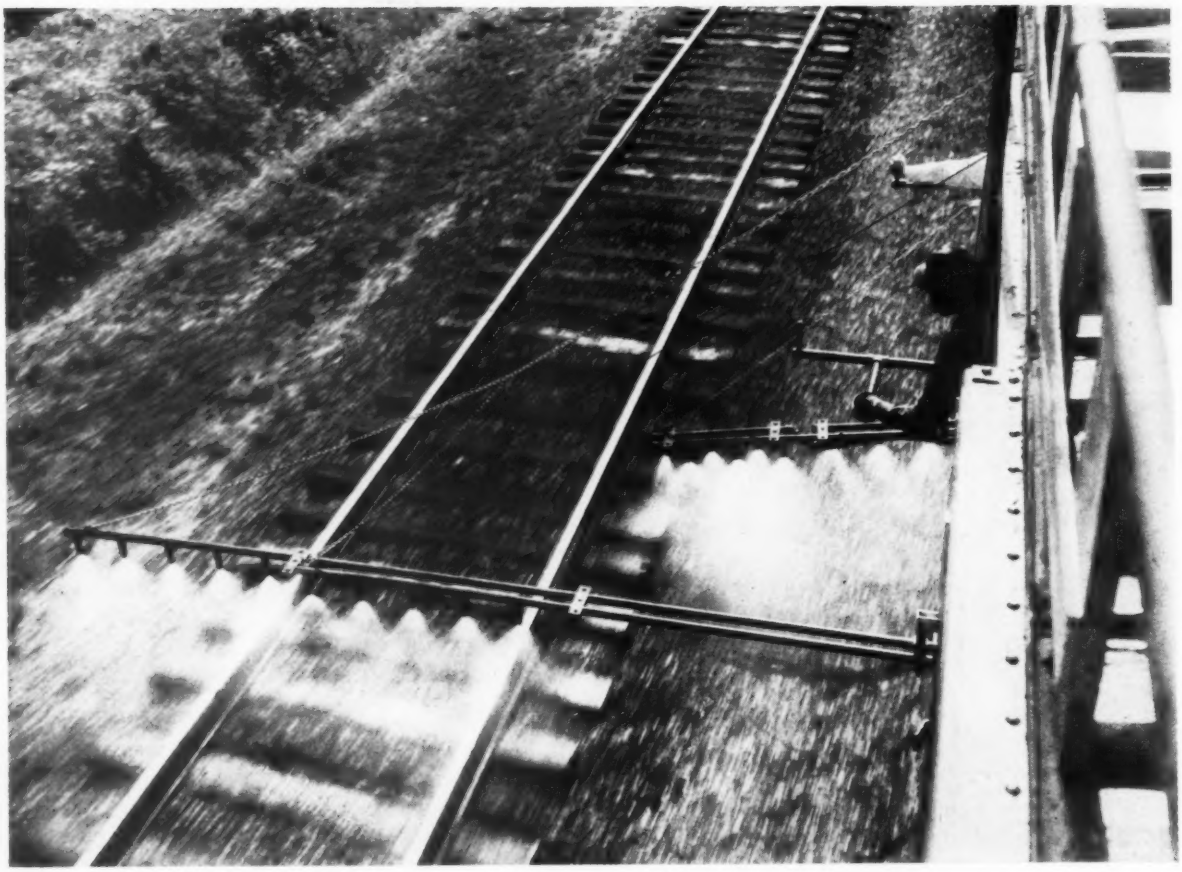
MECO RAIL AND FLANGE LUBRICATOR decreases wheel flange friction, increases safety; prolongs life of high rail in curves, 2 to 4 times.



MACK REVERSIBLE SWITCH POINT PROTECTOR — Original application prolongs switch rail life 4 to 5 times; then it's removed, reversed, reapplied and prolongs switch rail life another 4 to 5 times.

Maintenance Equipment Company

RAILWAY EXCHANGE BUILDING • CHICAGO 4, ILLINOIS



Research Proved WEED KILLERS

. . . APPLIED WITH MODERN EQUIPMENT

Time and time again, BOGLE research has paid off in improved chemical track weeding at lower cost. Now we are equipped to do a better job than ever with newly-developed spraying equipment providing better, more closely controlled application.

BOGLE chemicals are *tested* herbicides which have been proved in "on track" field testing. We know what they can accomplish. We are ready and equipped to cooperate with you in any program of weed or brush killing, large or small.

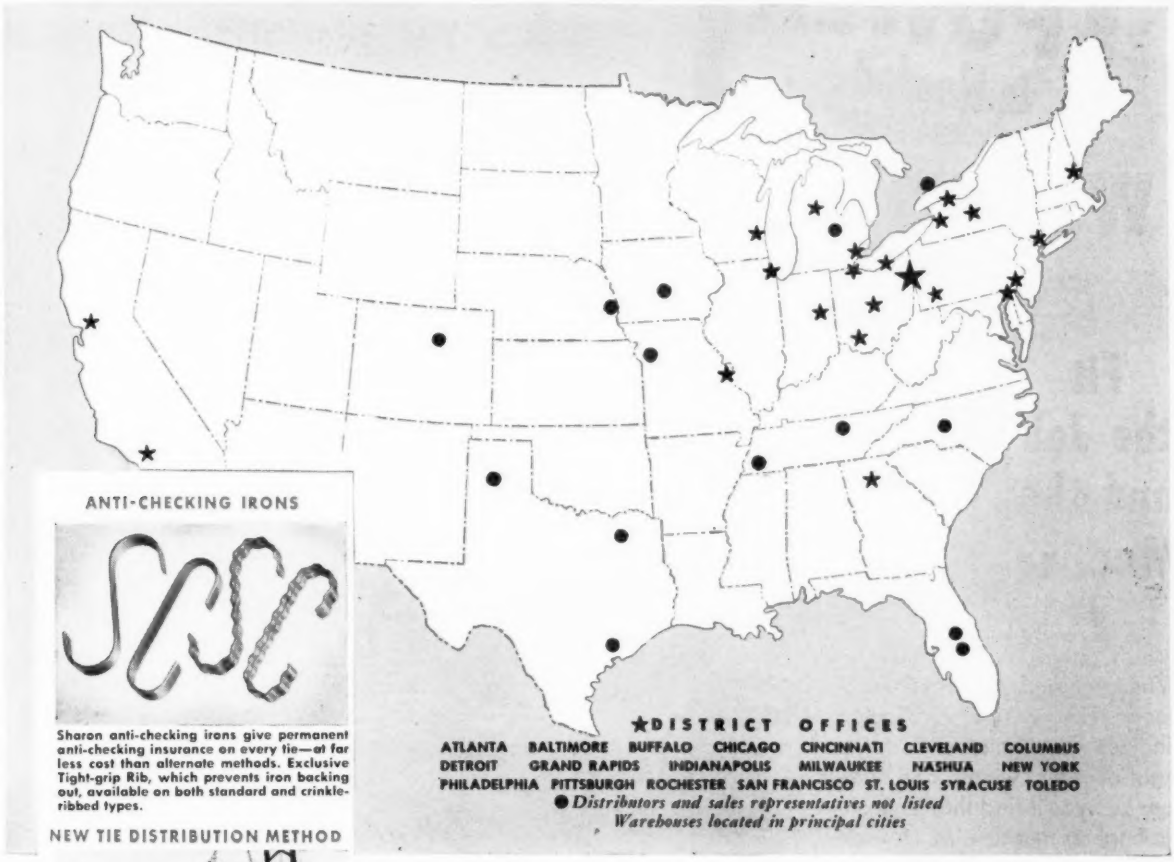
THE R. H. BOGLE COMPANY

Complete Weed and Brush Killing Service

Atlanta, Ga. ALEXANDRIA, VA. Memphis, Tenn.

Now... get local service

from Brainard nationwide



ANTI-CHECKING IRONS

Sharon anti-checking irons give permanent anti-checking insurance on every tie—at far less cost than alternate methods. Exclusive Tight-grip Rib, which prevents iron backing out, available on both standard and crinkle-ribbed types.

NEW TIE DISTRIBUTION METHOD

Brainard's new method of handling and distributing ties cuts handling costs as much as 30%. Only two men are required to handle unit loads of ties, using specially rolled steel strapping and special lifts (patents pending).

STEEL STRAPPING SYSTEM

The Brainard Strapping System is a complete strapping service. Includes a full range of strapping widths and thicknesses; complete tool and accessory line for any job; engineering service on your packaging or shipping problems.

BRAINARD service to the railroad industry is now handled through Brainard district offices located throughout the U.S. This gives you the advantages of fast, personal, local service.

Brainard's salesmen are backed up by a top flight technical organization at Brainard headquarters. The extensive experience of this group is available to you at no charge. They will study your operations, make out recommendations, and work out specifications for you.

Call on your local Brainard salesmen for complete, satisfactory service.

Write for complete information

Brainard

SHARONSTEEL

STEEL DIVISION

SHARON STEEL CORPORATION

WARREN, OHIO

BRAINARD STEEL DIVISION, Dept. S-5
Griswold Street, Warren, Ohio

Please send bulletins on following:

- ☐ ANTI-CHECKING IRONS
- ☐ TIE DISTRIBUTION METHOD
- ☐ BRAINARD STRAPPING SYSTEM

Your name_____

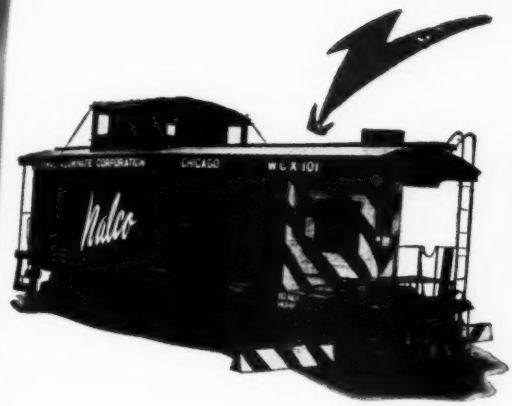
Company_____

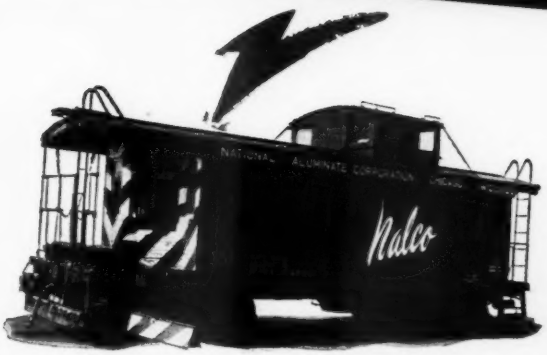
Department_____

Address_____

City_____ State_____

For additional information, use postcard, pages 463-464





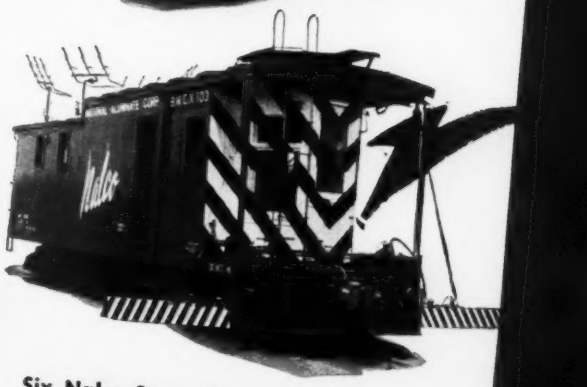
6 MORE REASONS for *Nalco*

COMPLETE WEED and BRUSH CONTROL

Nalco Spray Cars, engineered to give precision chemical dosage and coverage, are added good reasons for using safe, powerful Nalco weed and brush control chemicals on your right-of-way.

Several Nalco formulas are available . . . specifics for grasses, weeds, annuals or perennials, and Nalco spray cars are equipped to spray two formulas simultaneously, when necessary, in correct proportions for effective control. Spray cars, each with precise metering and indicating equipment, are available without charge to railroads using Nalco weed control chemicals in tank car lots.

Write for data on spray car availability and Nalco chemicals to keep your right-of-way free of weeds and brush.



NATIONAL ALUMINATE CORPORATION
6191 West 66th Place • Chicago 38, Illinois
Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario

THE *Nalco* SYSTEM • Serving Railroads through Practical Applied Science

Six Nalco Spray Cars shown above have all gone into service within the past two years. Modern design, equipment and instrumentation assure maximum spraying control and labor-saving efficiency.

MORE WORK-TIME

In work train fleets, or on independent off-track operation, Koehring **HEAVY-DUTY** ¾-yard 304 protects your work schedules against costly down time . . . its heavy-duty "plus" insures continuous dependable performance during rush periods, war crises and all other emergencies.

All-welded, box-type shovel boom and double dipper sticks . . . plus torsion-resistant shipper shaft mounted on top of deep boom mid-section . . . withstand twists and strains of heaviest digging. One-piece chain, inside boom, gives powerful, positive crowd. Big booster clutch cuts normal lever pull over 50%, reduces operator fatigue . . . yet retains "feel" of load. Heat compensator spring makes tension changes automatically, maintains full clutch efficiency at all times.

Koehring 304 lifts 13.9 tons on crawlers . . . up to 25 tons on rubber-tired truck or cruiser mounting. Other Heavy-Duty sizes lift up to 79½ tons . . . have dipper capacities to 2½ yards.

SELF-PROPELLED RAILAID

works both on and off-track, travels at 4 rail speeds up to 14.4 m.p.h. Crane loads and unloads itself on ramp-equipped propulsion car in less than 10 min. . . . lifts 6.6 tons from carrier, 8¼ tons from ground . . . converts to clamshell, dragline, ½-yd. shovel, hoe.

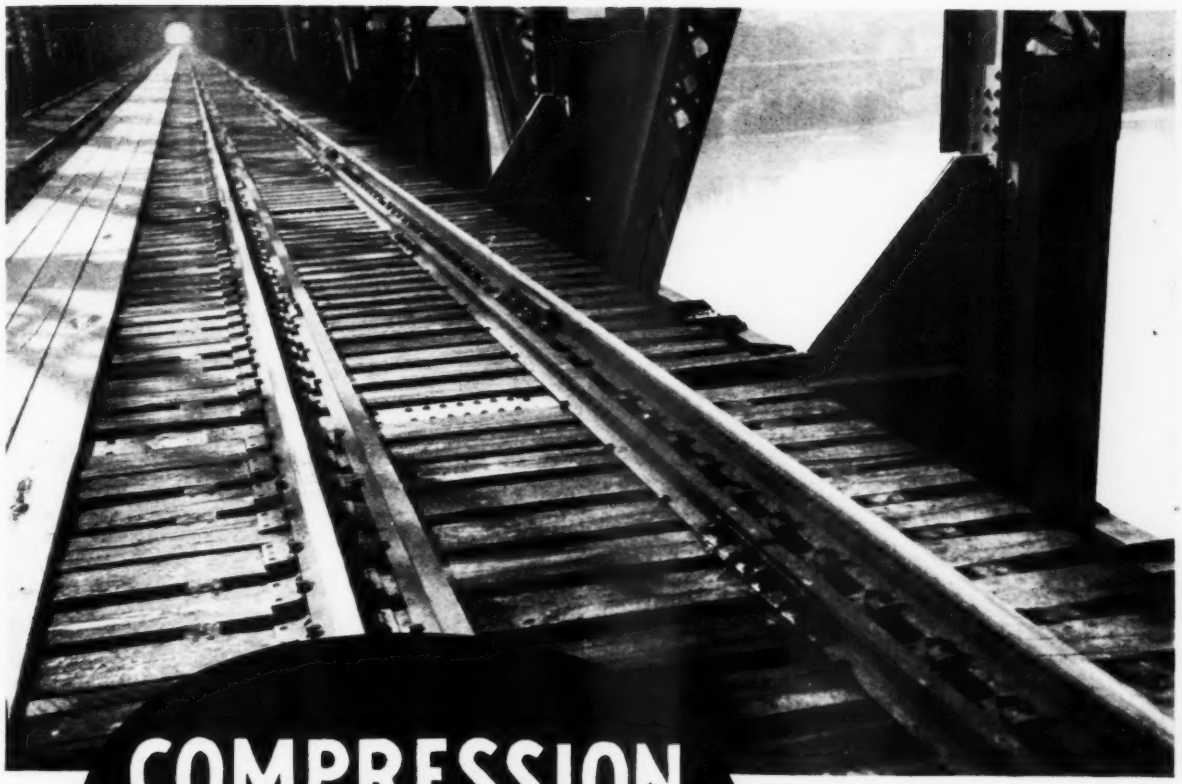
RAILROAD MUD-JACK®

stabilizes track beds without interrupting rail traffic. Injection points are driven into water or ballast pockets in sub-grade . . . hydraulic pump forces soil-cement slurry into weakened area, stabilizing existing material . . . leaves firm, lasting sub-grade.

KOEHRING HEAVY DUTY

KOEHRING COMPANY, Milwaukee 16, Wis.

(Subsidiaries: JOHNSON • PARSONS • JOHN-MEE)



COMPRESSION *Rail Anchors*

Nowhere is firmly held track and uniform expansion more important than on bridges and viaducts. On these vital installations and on main line track, turnouts, crossings and welded rail, Compression Anchors are providing efficient, economical two-way protection.

THE RAILS COMPANY

General Office
178 GOFFE STREET, NEW HAVEN 11, CONN.

ST. LOUIS, MO. HOBOKEN, N. J. CHICAGO, ILL.

CLASSIFIED ADVERTISEMENTS

Use this section when seeking a new man, new position, or when buying or selling secondhand equipment.

CLASSIFIED ADVERTISEMENTS

$10.00 an inch, one inch deep by three inches wide, an insertion.

EMPLOYMENT ADVERTISEMENTS

10 Cents a word a month, including address, minimum charge $2.00. Remittance must accompany each order.

Railway Engineering and Maintenance
Classified Advertising Department
79 W. Monroe St., Chicago 3

FOR SALE

Used Steel I Beams—¾" web
4—20" h, 8" fl, 16' L.
4—24" h, 7-¾" fl, 25' L.
2—24" h, 7-¾" fl, 24' L.
1—24" h, 7-¾" fl, 24'6" L.
2—20" h, 8" fl, 46" L.

Used Plate Girder Spans
4—21'7" L, 14" w.
All in good condition

FOB on site: Eastern Pa.

Address inquiries to:
T. F. SCHOLES, INC.
P. O. Box 112, Reading, Pa.

For additional information, use postcard, pages 463-464

Easier, Faster Spiking

with G & H TIE NIPPER

Developed and successfully used in conjunction with out-of-face track surfacing gangs where tie renewals run fairly heavy. Also employed with the same effectiveness with rail laying crews, or in any other place where ties have to be nipped up for spiking.

The nipper will hold a tie against the rail while it is being spiked with pneumatic spiking hammer. Both ends of tie can be nipped together, or one end at a time. One man can perform the operation, whereas with hand tools, two to four men are required, depending on condition of sub-grade, etc.

The G&H Tie Nipper can be used in all types of track work where spiking of ties or even tamping of ties requires them to be held to the rail.

Modern in design, up-to-date in construction, this device will assist greatly in reducing maintenance costs.

Railway Trackwork Co.

3207 KENSINGTON AVE., PHILADELPHIA 34, PA.

Representing

Burro Cranes	Wayer Impactors
C-F Lifters	Willson Goggles
C-F Welding Positioners	Wright Air Saws
Northwestern Motor Cars	Woodings-Verona Tools
THOR Electric Tools	

9268

Kill Weeds

more effectively at less cost!

HYKIL

Complete Off-Track Weed Control System

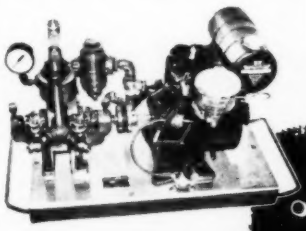
Proven performance of the economical Series T Sprayer coupled with the use of HYKIL Weed Killer #6 provides results with two man spray crew equal to the work of eight when burning or hoeing . . . and with additional savings over cost of material used!

For best results use the TWO!

Series T Sprayer...
HYKIL Weed Killer #6

SERIES T OFF-TRACK SPRAYER

Completely equipped portable unit useable from motor-car, trailer or truck. Draws HYKIL Weed Killer and water from separate containers, mixes at pump. Dependable suction regulators give positive, accurate control to desired mixture. Spraying pressures regulated by engine speed. Unit includes engine, pump and mixing unit, spray wands, spraying and suction hoses and fittings . . . ready for work. Ideal for application of many other type weed killers. Available in four and eight gallons per minute models.



HYKIL WEED KILLER #6

High-potency concentrate of specially refined petroleum compounds for fast, longer-lasting kill. Water-dilution does not lower effectiveness. Adopted by major railroads as standard material for weed control. Excellent for treatment of weeds adjacent to buildings, tie piles, stock chutes, yards, and wherever hand removal has previously been necessary.

Write for complete information and literature

W. T. COX COMPANY
1021 Fruit St., Santa Ana, Calif.
1015 Walnut St., (Suite 300)
Kansas City, Mo.

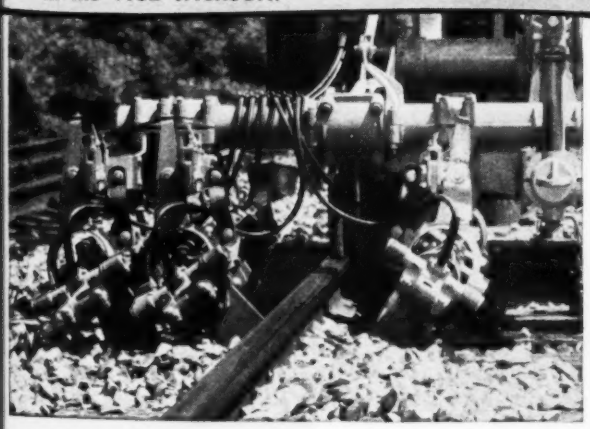
HYKIL
RAILROAD DIVISION

NO OTHER "MULTIPLE" MATCHES THE *Versatility* OF THE JACKSON!

Effortless, rapid and exact hydraulic indexing from tie to tie is furnished at the turn of a control in the 1952 JACKSON.

- ✔ It is the ONLY power tamper that OPERATES WITH EQUAL EFFICIENCY IN ANY PRACTICABLE LIFT OF TRACK and IN ANY TYPE OF BALLAST,
- ✔ THAT IS AS PRACTICAL FOR USE IN REGULAR OUT-OF-FACE SURFACING AS IN MAKING NEW BALLAST INSERTIONS,
- ✔ THAT PROVIDES QUICKLY INTERCHANGEABLE BLADES AND QUICK ADJUSTMENT OF THE ENTIRE MACHINE SO THAT GREATEST EFFICIENCY IS ACHIEVED UNDER ALL CONDITIONS.
- ✔ IT IS THE ONLY POWER TAMPER IN WHICH THE TAMPING BLADES CAN BE DIRECTED TO PENETRATE TO, AND ACTUALLY TAMP THE *VITAL SPOT* — THE LOAD-BEARING ZONE, directly beneath the rail.
- ✔ And its powerful vibratory action coupled with the right amount of pressure, as exerted by the weight of the tamping crosshead, consolidates the ballast uniformly and thoroughly.

With a JACKSON Multiple on your track (available on a down-to-earth basis, if desired) we believe you will agree it will do a better, faster job with less men and at less cost than any other equipment available. Let us discuss it with you.



Note how the tamper blades are directed right beneath the tie and rail.

MFD. BY JACKSON VIBRATORS INC. LUDINGTON, MICH.

SOLD IN U.S.A. BY

ELECTRIC TAMPER & EQUIPMENT COMPANY

LUDINGTON, MICHIGAN

Cummins® Diesels do so many jobs - so much better

Shovels, cranes, industrial locomotives

Drilling rigs, centrifugal pumps, generator sets

Buses and on-highway trucks

...because they're custom-built to fit the job

Earthmovers, logging yarders and loaders

Off-highway trucks, crawler tractors

Work boats, pleasure craft

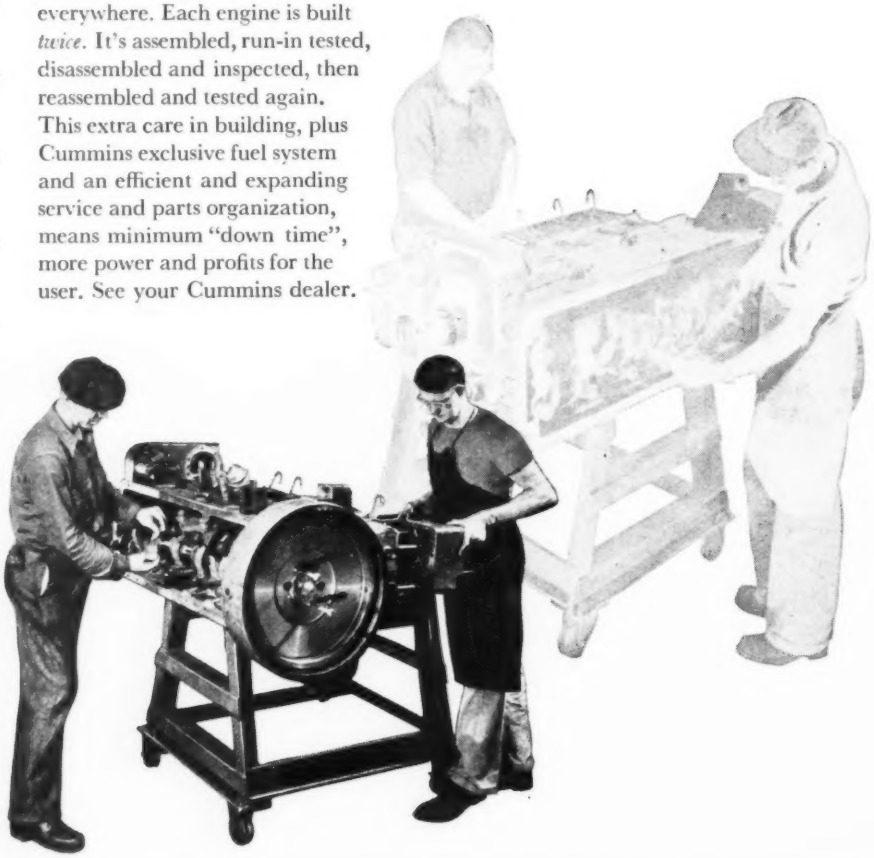
Lightweight, high-speed Diesels (50-550 hp) for these and many other uses

---

...because they're

BUILT NOT ONCE BUT TWICE

Rugged, lightweight, high-speed Cummins Diesels are at work everywhere. Each engine is built *twice*. It's assembled, run-in tested, disassembled and inspected, then reassembled and tested again. This extra care in building, plus Cummins exclusive fuel system and an efficient and expanding service and parts organization, means minimum "down time", more power and profits for the user. See your Cummins dealer.



CUMMINS Dependable DIESEL

TRADEMARK REG. U. S. PAT. OFF.

Diesel power by CUMMINS

CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA

Export: Cummins Diesel Export Corporation • Columbus, Indiana, U.S.A. • Cable: Cumdiex

For additional information, use postcard, pages 463-464

King of the hill!

• The mountain sheep is sure-footed and rugged—and he continually calls on these capacities to preserve his title as "king" of his craggy domain.

The True Temper Rail Anchor is even more "sure-footed" and durable. It provides positive, stationary gripping action on any rail base—new or worn—for as long a period as you want. It's easy to apply, easy to remove and re-apply when necessary.

These qualities add up to unequalled efficiency and economy in track maintenance—and *reasons why* True Temper Rail Anchors continue to be first choice on thousands of miles of track.

Made and sold only by

TRUE TEMPER Corporation

RAILWAY APPLIANCE DIVISION
GENERAL OFFICES, CLEVELAND, OHIO
Factory: North Girard, Pa.

DISTRICT OFFICES:
2033 Daily News Building, Chicago, Illinois
105 Duane Street, New York, N. Y.

REPRESENTATIVES AT:
St. Louis, Missouri
St. Paul, Minnesota

TRUE TEMPER

ALSO MAKERS OF TRUE TEMPER SAFETY RAIL FORKS • BALLAST FORKS • TRACK SHOVELS • SCOOPS • SCUFFLE HOES • AXES • HAMMERS • HATCHETS • SCYTHES • WEED CUTTERS

19 m.p.h. goes anywhere,

Since its introduction over 4 years ago, Tournadozer has proven to be the best right-of-way maintenance dozer money can buy. You get a one-man "work crew" that speeds dozing, pulling, pushing tasks anywhere. Tournadozer's unusual rubber-tired mobility lets you drive on highways or the right-of-way, handle work on, off, or across the tracks at will. You eliminate work train service, and main line delays, because operator simply gets on and drives job-to-job at a moment's notice. This speeds service, saves time.

Speeds to 19 m.p.h. forward, 8 m.p.h. reverse

Powerful 186 h.p. C Tournadozer gives you the high-speed operation you've always wanted in a railroad dozer . . . has 4 forward speeds to 19 m.p.h., 2 reverse to 8 m.p.h. — helps you get 2 to 3 times the production of crawlers. Gets more jobs done, faster.

No gear-shift delay

Tournamatic transmission eliminates stops for shifting . . . puts constant power to work at all times without loss of momentum. When selector lever is moved to speed wanted air-actuated clutches give instantaneous power transfer from one gear ratio to another. Torque converter, electric steer and shift are also available as optional equipment.

Eliminates tie-up of rail traffic, train equipment

Because Tournadozer gets out of the way fast, it does not tie up rail traffic while cleaning drainage ditches or landslides, cutting down banks, spreading cinders, ballast, preparing grade crossings, etc. It requires no work train, no train crew, no loading and unloading delays. Operator simply drives out to the job, cleans up the dirt to be moved, goes on to the next assignment. Your regular maintenance-of-way crew can become competent operators in a short time.

Ample traction . . . less maintenance

Big 21.00 x 25 low pressure tires assure ample flotation and traction for toughest going. There are no crawler track rollers to lubricate . . . no multitude of moving parts working in the open, exposed to dust, grit and water. With Tournadozer, moving parts are sealed in, lubricated, ride on antifriction bearings. You roll *over* abrasive materials instead of grinding through them.

Tires do not chamfer ties

Soft, flexible, wide-tread tires straddle rails, ride on ties without chamfering, thus saving tie maintenance. Rig also travels over single track trestles, through small diameter tunnels. In yards, it can cut directly across tracks, follow walkways, or travel on open track. Tournadozer is a real railroad tool . . . goes anywhere, works anywhere you have railroad dozing, pushing, or pulling to do.

Before you buy any dozer, it will pay you to get all the facts on this fast-moving, rubber-tired Tournadozer from your LeTourneau Distributor . . . see it in action and you'll be sold on its ability to help you.

LETOURNEAU LET

HIGH-SPEED, RUBBER-TIRED, EXCAVATING • HAULING • LIFTING EQUIPMENT

cross-track TOURNADOZER speeds right-of-way maintenance

More jobs at less cost

Versatile rubber-tired Tournadozer is "one-man work crew" . . . handles all types of railroad maintenance: spreads ballast, "daylights" curves, cleans ditches, backfills around culverts and bridge abutments, levels crossings, grades for sidings.

Quick repairs anywhere

Tournadozer is ready to go anytime via highway or down the track at fast speeds to make short work of emergency jobs. It quickly removes slides, fills washouts, cleans up at wrecks, straightens tracks, reinforces causeways and bridge approaches.

Faster material handling

With instant-shift selection of speeds to 19 m.p.h. forward and to 8 m.p.h. reverse, you stockpile sand, gravel, cinders, bulk chemicals, etc., faster and more economically. Big tires compact, seal coal without breakage. Oxygen is excluded by covering, packing.

Easy to operate

Air-actuated and electric controls take labor out of operating. No clutches to "fight", no end-of-day slow down. Operator sits ahead of engine . . . can see where he's going, what he's doing. Multiple-disc air brakes "stop on a dime," improving safety.

R. G. LeTourneau Inc.

DESTROY WEEDS

Model PB-B

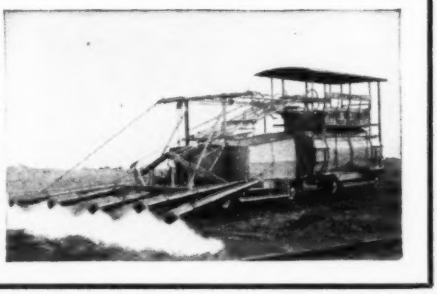
Woolery WEED BURNERS

Woolery Weed Burners are available in 4 sizes to meet your needs for effective, low cost roadbed maintenance. Burner jets are individually controlled and will destroy ALL types of weeds on roadbeds, embankments and ditches. **Can also be used in winter for melting ice and snow.**

Model PB-B
WOOLERY WEED BURNER trailer type (shown above) can be towed by motor car. Three burners clear a swath 15 feet wide on first trip and if required can be widened to 25 feet with burners extended on second trip.

Model WBZ
WOOLERY GIANT OCTOPUS is the favorite for heavy duty requirements. Will destroy a swath 25 feet wide in one trip or up to 35 feet with burner arms extended on second trip.

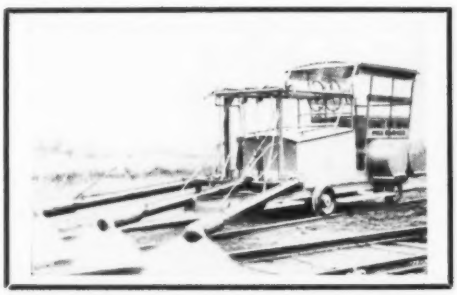
Model WBF
WOOLERY MIDGET OCTOPUS is recommended for normal requirements and has all the features of its bigger brother. Has three burners instead of five and will burn a swath 15 feet wide on first trip and 25 feet on the second.



Model WBZ

WRITE FOR COMPLETE INFORMATION

Model WBF



SINCE 1917 RAILWAY MAINTENANCE EQUIPMENT

Woolery MACHINE COMPANY

2919 COMO AVE. S. E. MINNEAPOLIS 14, MINN.

Exclusive Export Representatives

PRESSED STEEL CAR CO., NEW YORK, N. Y.

YOUR EXTRA EMPLOYEE THAT WORKS WITHOUT PAY

RACINE *Portable* RAIL SAW

- CROP RAIL IN TRACK
- WILL NOT SHATTER OR BURN RAIL ENDS
- CUT OFF ANY LENGTH DOWN TO 1/10"
- NO TRAFFIC INTERFERENCE

One man operates the RACINE Portable Rail Saw while it does the work of several hands. Designed specifically for cutting rail in track, it handles the job fast and dependably.

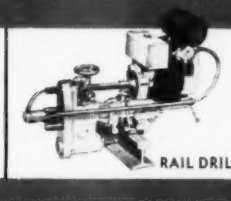
Cuts are smooth and accurate. Shattered and burned rail ends are eliminated. The possibility of rail failures from fractures that start with torch cutting or "nick and break" cropping is reduced.

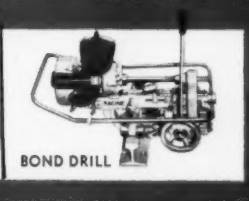
Easily moved by two men, it does not hamper traffic. Operation is simple. Maintenance cost is low. Here is an "extra employee" you can rely upon for steady output under all conditions.

Write for new, 3-color catalog describing RACINE Railway Maintenance Machines.

BUY DEFENSE BONDS

OTHER RACINE PORTABLE MACHINES





RACINE HYDRAULICS & MACHINERY, INC.
2038 Albert Street • Racine, Wis.

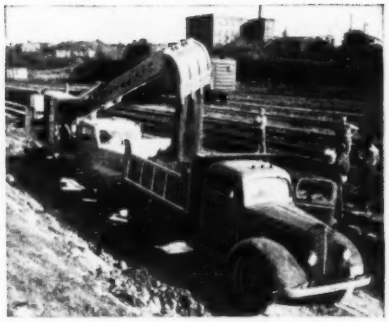
No "Elbow Room"...

EXCEPT FOR GRADALL'S FAMOUS ARM-ACTION!

THIS GRADALL recently found itself with a job that required working in an area very little wider than the truck itself. On one side was a cut that had to be trimmed. On the other, a busy main line track where traffic had to be maintained.

But the Gradall's unique arm-action handled the job swiftly and with greater precision than the hand labor and machines it replaced. Working from the top of the bank, often around posts and other obstacles, it first trimmed the top part of the slope. Then, backed into the narrow passageway, its hydraulic-telescoping boom "reached out" to finish the slope's lower portion, as well as digging a drainage ditch and cleaning the roadbed right up to the ties—all from this cramped position—with no interruption in traffic.

The multi-purpose Gradall is one machine you're sure to keep busy with many different jobs of off-track maintenance. For a field demonstration of its versatility and labor-saving precision action, contact your nearest Gradall Distributor.



Gradall's 360° mount and telescoping boom permitted loading spoil over cab into waiting truck, necessitated here by one-way approach to work area.

Hydraulic arm-action boom tilts bucket to work at any angle.

Note clean precision of finished slope and close work around ties with no hand labor.

Gradall Distributors in over 60 principal cities in the United States and Canada

Gradall®

DIVISION OF WARNER & SWASEY Cleveland

GRADALL—THE *Multi-Purpose* MACHINE FOR OFF-TRACK MAINTENANCE

ADDITIONAL INFORMATION

On Any of the Products Mentioned in This Issue

Below is a complete index of the products referred to in both the editorial and advertising pages of this issue. If you desire additional information on any of them, use one of the accompanying addressed and stamped postcards in requesting it. In each case give name of product and page number. The information will come to you directly from the manufacturer involved, without any obligation on your part.

Products Index

Complete Contract Service for Your Railroad*

WEED KILLERS

Materials combined to insure maximum control of vegetation conditions pertaining to your railroad.

PROTECTIVE RAIL SPRAYING

Providing equipment designed to spray protective coatings to rails and rail fastenings in **one** operation — capable of spraying through road crossings and special work as well as open track at a rate of 100 miles per day.

BRUSH KILLERS

Economically applied by specifically designed equipment for maximum coverage up to 100 feet each side of track resulting in positive brush control.

* ***Furnishing Equipment, Material and Trained Personnel***

CA • OILS • 2, 4-D

NTACHLOROPHENOL

BRUSH KILLERS

•

PROTECTIVE AIL COATINGS

Spray Services *Incorporated*

Pioneers in Right-of-Way Spraying

P. O. BOX 5444 HUNTINGTON, W. VA.

Announcing an Important New Fire Resistant Product for Railway Application

ZONE FIREPLATE
Patent Pending

POSITIVE FIRE PROTECTION

for Vertical Members and Supports of Railroad Bridges, Trestles and other Structures

Photos of Recent FIREPLATE Field Test Show Remarkable Fire Resistant Performance.

Every railroad bridge and building man knows the constant threat of fire to wood bridge and trestle supports. This threat is especially acute during the long, dry summer period Now . . . from the company that developed the famous Libbey-Zone fire resistant process comes a completely new product—FIREPLATE. This new product is scientifically correct and thoroughly field tested and proved. FIREPLATE serves a dual purpose: (1) provides exceptional protection against drying, rotting and deterioration and (2) assures almost perfect protection against fire damage.

Even when subjected to extremes of heat, FIREPLATE remains stable . . . will not liquify or run. Equally important, FIREPLATE is not subject to deterioration . . . the original application is all that is ever needed.

These photos, reproduced below, taken on March 28, 1952 during a typical FIREPLATE field test, show conclusively the ability of this remarkable new product development to resist fire damage.

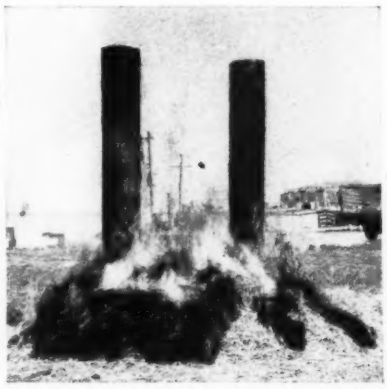
You are invited to get the complete facts about FIREPLATE. Let us arrange a demonstration . . . or send you sufficient FIREPLATE to conduct your own tests if you prefer. Write without obligation.

Start of the Test

The pole at the left is treated with FIREPLATE; the other pole is treated with a conventional protective coating. Both had been previously creosoted. Loose straw is placed around the base of each pole as shown. TIME: 9:00 AM

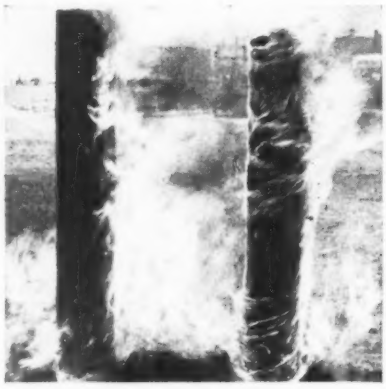
"Like a Brush Fire"

This simulated condition could happen actually on any dry day. Within three minutes after the start of the fire, flames are lapping eagerly at the bases of the two poles. TIME: 9:03 AM



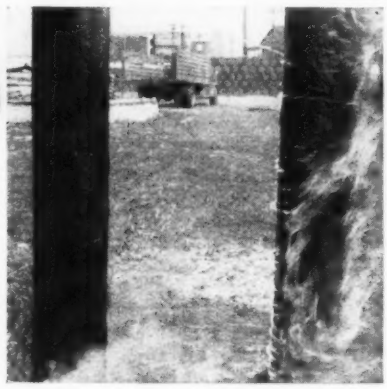
The Test Takes Shape

Seven minutes after the start of the test the FIREPLATE treated pole clearly shows its ability to resist fire. The pole treated with the usual preservative is burning vigorously. TIME: 9:07 AM



The Test Concluded

Both poles shown 16 minutes after the start of the test. The FIREPLATE treatment has prevented any traceable damage to the left pole . . . the other pole is a complete loss. TIME: 9:16 AM



FIREPLATE (Pat. Pending) IS OUR EXCLUSIVE DEVELOPMENT MADE AND SOLD ONLY BY

THE ZONE COMPANY

Division of the Southwestern Petroleum Company

Box 789 *Ft. Worth 1, Texas*

How TIMKEN® bearings keep a right-of-way car from going wrong

WHEN the Northwestern Motor Company designed and built its model 532R light service car, it wanted a car that would take the daily wear and tear of right-of-way maintenance, and still be ready to go at a moment's notice.

To insure dependability and availability, Northwestern engineers mounted the wheels and axles on double row Timken® tapered roller bearings. The front differential axle is split, permitting independent rotation of the front wheels for ease in removing the car from track. Both ends of the split portions ride in Timken tapered roller bearings, an exclusive Northwestern feature which provides a third bearing housing assembly on the front axle for greater strength and safety.

With Timken bearings, the 532R spends less time in the repair shop, and maintenance costs are reduced. Due to their tapered construction, Timken bearings carry both radial and thrust loads in any combination. Because of their true rolling motion and incredibly smooth surface finish, Timken bearings reduce friction and wear in the car's wheels. Higher speeds are possible, wheels turn smoothly, effortlessly. And wheel gauge is accurately maintained.

No other bearing gives you all the advantages you get with Timken bearings. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

NORTHWESTERN MOTOR COMPANY cuts maintenance costs of its model 532 R motor car by mounting wheels and axles on Timken tapered roller bearings.

FINISHED TO CLOSER TOLERANCES

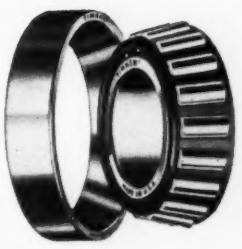
Finishing to incredible smoothness accounts for much of the precise, smooth rolling performance of Timken bearings. This honing operation is typical of the amazingly accurate manufacturing methods at the Timken Company.

The Timken Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

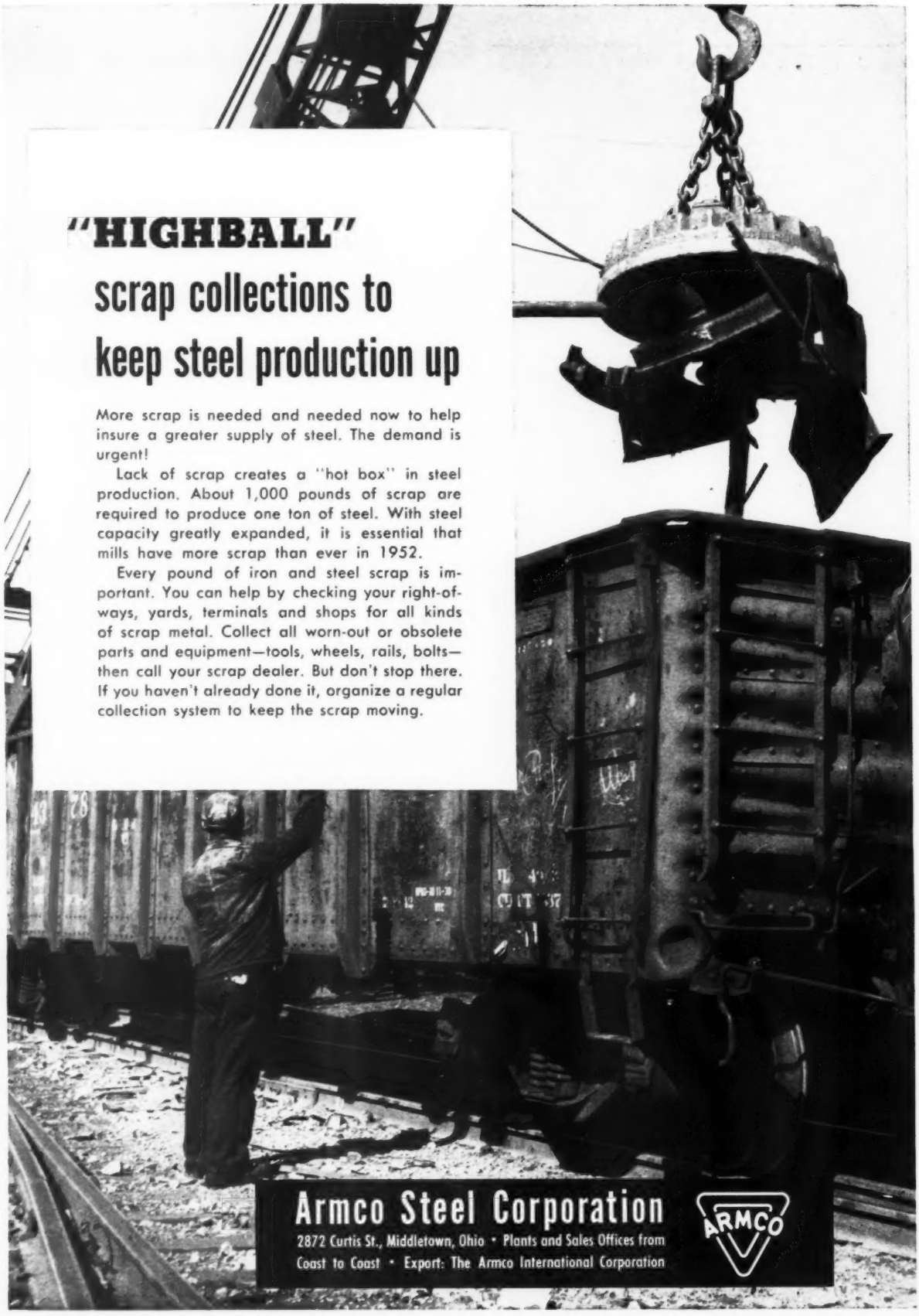
TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▱ BEARING TAKES RADIAL ◫ AND THRUST ⊣◫⊢ LOADS OR ANY COMBINATION ⊣◫⊢



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"Ammate," applied in this manner, keeps brush down as much as five years.

Track, right, was sprayed with CMU in April; photo taken in August. Left track not sprayed.

Du Pont Ammate® Keeps Brush Down with Fewer Sprays

Many users report lower cost to keep brush down with "Ammate" Weed Killer. Sprays once every five years do the job on their rights-of-way. For "Ammate" kills more kinds of brush, roots and all, than most other brush killers.

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Get this illustrated booklet *describing industrial brush control with Du Pont "Ammate" and other Du Pont brush and weed killers. Write Du Pont, Grasselli Chemicals Dept., Wilmington, Del.*

New Du Pont 80% CMU Keeps Ground Bare of Vegetation

Now you can reduce fire and maintenance hazards with new Du Pont 80% CMU Weed Killer. It destroys grass, broadleaf weeds and other vegetation . . . keeps weed growth out of ballast, switches, sidings, firebreaks and yards. And one application does the job for as long as a year or more.

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Du Pont CMU has other advantages, too. It is non-volatile, so there's less danger of spray drift damage, and, furthermore, it is non-flammable.

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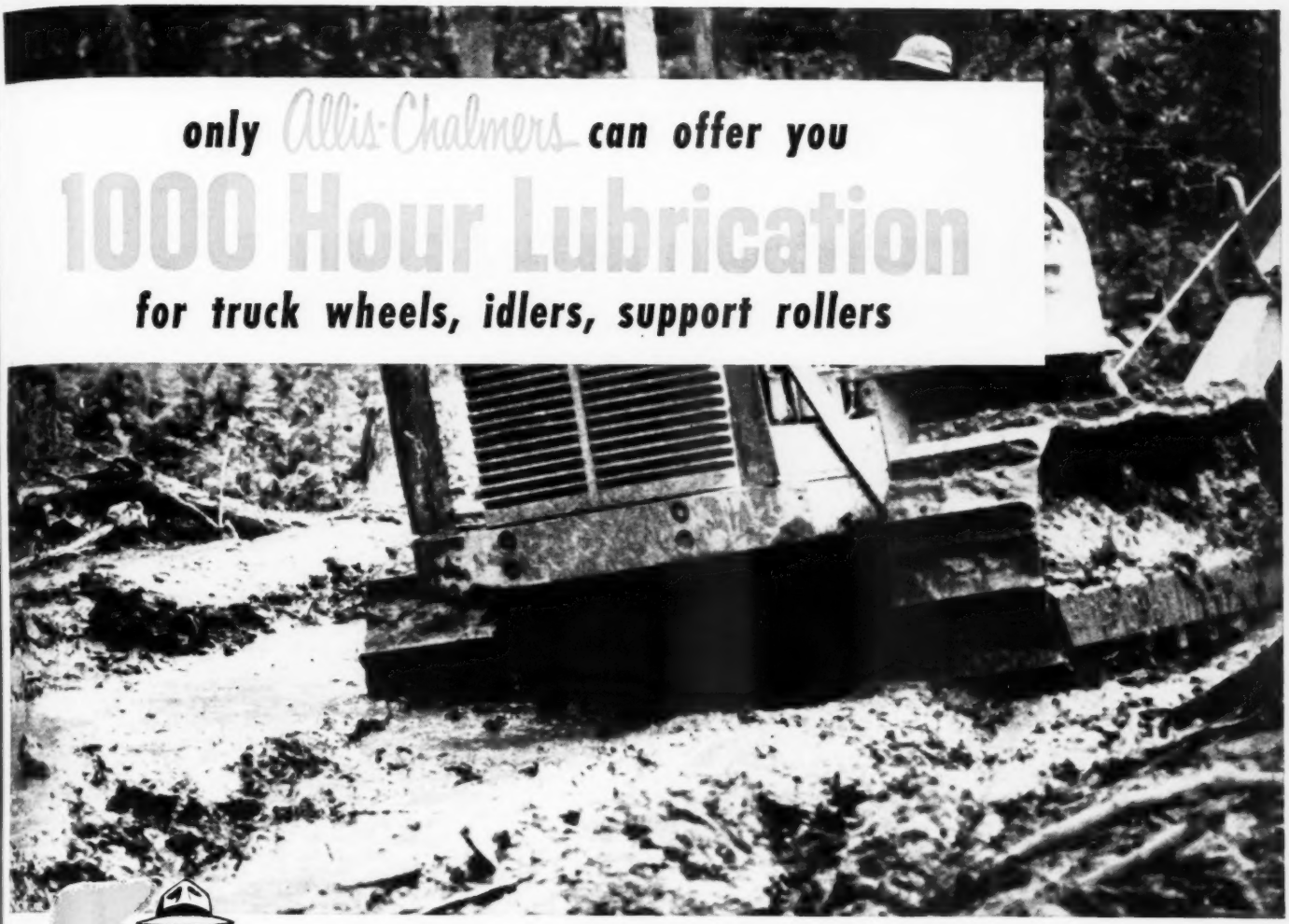

FULL PROTECTION—only One Greasing Every 1000 Hours—with Allis-Chalmers *Exclusive* Positive Seal, Roller Bearing Design

Think of it! You can operate for 6 months on a 40-hour-week basis with just one lubrication of 14 to 20 of the most-abused, hardest-to-service points on a tractor. It's possible through an exclusive combination of glass-smooth Positive Seals and anti-friction bearings that help you do more work at lower cost even under toughest conditions! And it's another ahead-of-the-field design feature found only in the four new Allis-Chalmers tractors.

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SAVES ON GREASE. Truck wheels, idlers and support rollers are grease-filled at the factory . . . need new grease only once every 1000 hours!

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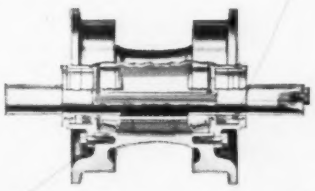
Positive Seals ground smooth as glass, seal the grease in...keep dirt, grit, dust, mud and water *out*.



Tapered Roller Bearings protect the Positive Seals by letting truck wheels, idlers and support rollers rotate freely . . . without side thrust or wobble.

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DESIGNED FOR YOUR JOB • BUILT TO TAKE IT • EASY TO OPERATE • EASY TO SERVICE

No. 281 of a series

Railway Engineering and Maintenance

SIMMONS-BOARDMAN PUBLISHING CORPORATION 79 W. MONROE STREET CHICAGO 3, ILL.

Subject: A Double-Edged Tool

May 1, 1952

Dear Readers:

From time to time the question arises in my mind as to how, and to what extent, you make use of the advertising printed in this magazine. From our own observations, based partly on studies that have been made at various times, we know that there is a relatively high degree of reader interest in our advertising pages. What I am more interested in at the moment is the attitude that you, as an individual, have toward these pages.

You all know that the companies whose products are advertised in Maintenance pay for the space used for this purpose. In buying such space they are taking advantage of a recognized method of conveying their sales message to potential buyers. The advertiser naturally hopes that you, as a prospective purchaser, will see the message and will be impressed favorably by it.

We now come to this question: Do you regard yourself merely as a potential buyer of the products advertised or as one who is in a position to profit by reading the advertising pages? In asking this question we may seem to be splitting hairs, but actually there is an important distinction involved. One viewpoint implies a more or less passive attitude toward the advertising pages, while the other carries the positive motivation that the information contained in these pages can help the reader do a better job.

Suppose we consider some of the possibilities in the latter connection. For one thing the advertising of established products frequently contains cost-saving suggestions for new applications or ways of using those products. Again, the product advertised may have been improved in some material way that will enhance its usefulness to you. Furthermore, the advertising pages of practically every issue contain references to entirely new materials, equipment or devices which conceivably could be of great value in helping you to reduce costs or otherwise to get better results in carrying out your responsibilities.

Because of these considerations such magazines as Maintenance may be likened to a double-edged tool, the two edges consisting of the editorial and advertising pages, respectively. As with anything else the usefulness and efficiency of the tool will depend to a large extent on the way in which it is used. To get the maximum value out of your copy of Maintenance you will wish to read the advertising pages with the same care and thoroughness that you devote to the editorial section.

Yours sincerely,

Merwin H. Dick

Editor

MHD:ag

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4 JUMPS AHEAD OF COMPETITION...

Yes, the Universal Frog for yard service is built better 4 ways . . .

- It is made of an alloy electric cast steel that adapts itself to low cost electric or oxy-acetylene welding in track or shop.
- Tie plates are cast integral with the Universal Frog—an exclusive!
- Rail supports are cast integral on both ends of the Universal Frog —another exclusive!
- One-piece construction — no loose joints. Eliminates extra parts and cuts down maintenance costs.

HERE'S PROOF: Compare the cross sections of the Universal Frog with conventional types. Note the improved type rail joints, the patented supporting shelf, integral tie plates and rib construction.

Fairmont

RAILWAY MOTOR CARS
AND WORK EQUIPMENT

..."guardian of the nation's railways!"

In order to simplify otherwise complex procurement problems, Fairmont often designs, builds and assembles certain combinations of equipment that perform as a team or unit. The Fairmont Grouting Outfit W65 Series A, for example, combines a mixing unit, a dolly car, a sand screen, two scoops, water handling equipment, grout injectors, air hoses, a canvas cover and many other items. The result is a compact, portable, easily operated grouting outfit that guarantees maximum efficiency and minimum charging time. It is easily adaptable to any grouting program, large or small, and provides almost unbelievable simplicity of operation. Like so many other Fairmont products, it saves innumerable time and effort in railway maintenance. The Grouting Outfit W65 Series A demonstrates once again how well deserved is Fairmont's reputation as the "guardian of the nation's railways."

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NAME REGISTERED U. S. PATENT OFFICE

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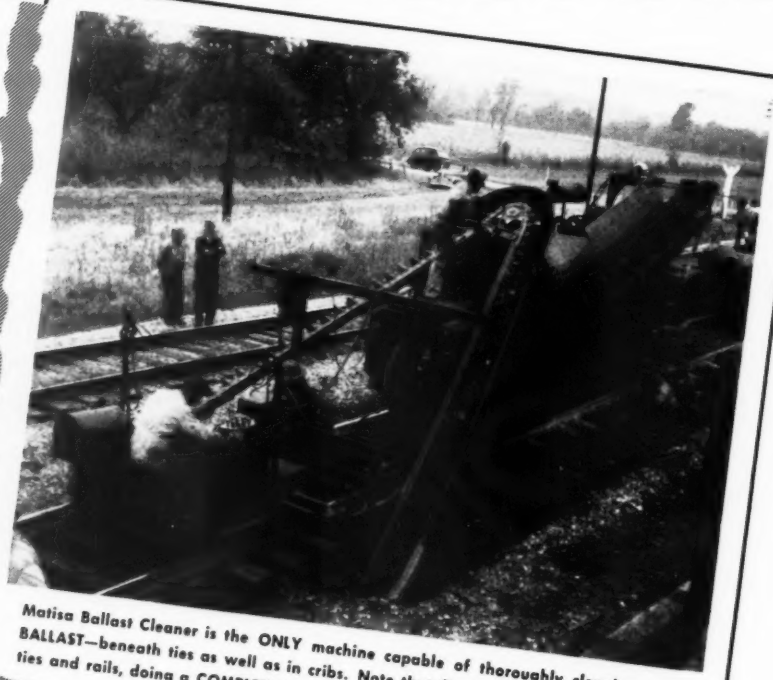
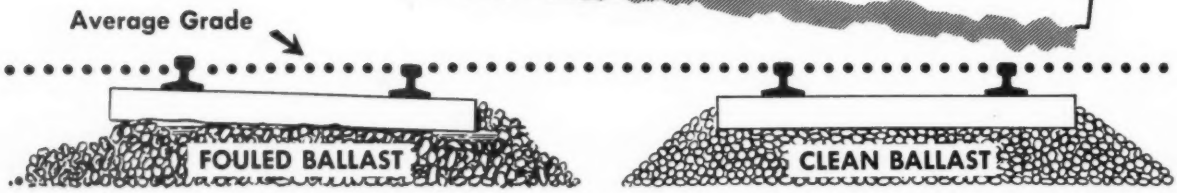
Yet put up to 18" of CLEAN BALLAST UNDER TIES



Matisa Ballast Cleaner is the ONLY machine capable of thoroughly cleaning ALL BALLAST—beneath ties as well as in cribs. Note that digging teeth pass clear under ties and rails, doing a COMPLETE job.



BEFORE *Matisa* CLEANING **AFTER *Matisa* CLEANING**

Whether to hold grade levels on dirty ballast, or provide a clean ballast cushion with a grade raise has long been a major maintenance of way headache. Now, with the Matisa Ballast Cleaner, you can hold the grade level (or *lower* it), yet put as much as eighteen inches of thoroughly cleaned ballast under ties!

Matisa cleaning—and *only* Matisa—solves the common grade problems at crossings, underpasses and in yards... And used with the Matisa Tamper, produces roadbed that is *better than new-laid track* put down with other ballasting methods.

Matisa Ballast Cleaners are furnished on a supervised rental basis for cleaning 1,000 feet or 1,000 miles of your track . . . rapidly, efficiently and *completely.* Write our M. W. Engineering Department for details on 1951 Cleaner availability.

THE MATISA EQUIPMENT CORP.
224 South Michigan Blvd. • Chicago 4, Illinois

ALL OVER THE WORLD ***Matisa*** TRACKWORK SPECIALISTS

Let's Face It—

A Problem that Concerns Everyone

At the present time there is occurring in this country a desperate struggle between organized labor on the one hand and business management on the other. The objective of the labor organizations is to obtain as much as they can in the form of higher wages and other benefits for their members, while business management in general is endeavoring, with little or no success, to hold the increases to what is considered justified in view of the higher cost of living and other factors.

At a time when the standard of living enjoyed by the population as a whole was never higher, it is a deplorable fact that this struggle is probably generating more bitterness now than ever before, with the result that the two factions are continually drawing further apart, with each interlude in the strife being used to stir up feelings and make plans for the next round. Thus, the possibility of the two groups reaching some kind of an understanding for the adjustment of their differences on a fair and impartial basis is ever becoming more remote. Although governmental machinery has been set up to mediate and arbitrate disputes growing out of the demands of labor this machinery has failed dismally to bring the parties together in an atmosphere of good will.

A fundamental question when considering the problem is this: Where is this inter-factional dispute taking the country? The answer is simple. A continuation of the present trend can only have one outcome—ruinous inflation. The next logical question is this: How can the trend be checked? The answer is as simple as that to the first question. The upward spiral of wages and prices must be brought under control. Since the labor organizations are forcing the issue they—and only they—have it in their power to put a stop to, or at least slow down, a trend that otherwise might have extremely serious consequences.

Since the railroads are deeply involved in this controversy, readers of this magazine, through personal experiences, can readily come to their own conclusions regarding the issues involved and the logical outcome if the present trend goes on indefinitely. They will likewise perceive that, if the trend is to be checked, some way must be found to impress the labor organizations and their members with the fact that the future of every citizen of this country, whether he be laboring man, white-collar worker or a representative of management, is dependent on what happens to the economic system. In other words if the economy is thrown off balance, with resulting deflation or inflation, everybody suffers, regardless of what temporary advantages he may have enjoyed while the situation was in the making. The plain, brutal fact is that each individual has to make up his mind whether he wants himself and his children to live in an economic atmosphere that has produced the highest standard of living the world has ever known, or whether he is willing to take a chance with one of the isms that have brought poverty and despotism to other countries. It is as simple as that.

Superficially it may appear that individuals are powerless to stem the tide. But there must be a beginning somewhere—and why not in the relationship between a railroad supervisory officer and the men under him, especially those who are influential in the organizations? A remark here, a comment there, if multiplied enough times, could conceivably start ripples of interest and reaction that would spread throughout industry. The stakes are simply too great to permit a defeatist attitude to stifle any attempt to solve the problem.

FIGHTING FLOODS—

Can Habitual Policies Be Improved?

AS this issue goes to press, many railways of the midwest are fighting floods or are anticipating them. Many of the supervisory forces involved are "old hands" at guiding the preparatory work, aimed first at reducing the effect of the flood and second at rehabilitating tracks and structures after the damage has been done. To these experts, fighting floods is almost a matter of habit. Whether or not all of those habits are good is a moot question which warrants further discussion.

Let's look at two flood-duty practices which produce controversial benefits. Of these, the most talked about concerns the extent to which subordinate supervision is often "worn out" by picayune routine chores before the need for "real" work arises. Some of the complainants bemoan the necessity that they and their assistants must remain on 24-hr. duty reporting to headquarters minor details, such as the foot-by-foot rise of water at all critical points, when they could well be delegating such duties to reliable men under their supervision. These men are seeking no bed of roses when they suggest a little sleep during the "watching period"; they sincerely believe that the railroad will be better served if they get it. They have been through the mill when rest was unknown. From that experience they have come to know that the "old hand" who stays awake day and night ineffectually watching water cover his railroad, is dead on his feet and worth much less than a wide-awake neophyte several days later when washouts must be filled and emergency trestles built. Isn't it possible that better results might be obtained by conserving the energies of the experienced "first team" until repair work is ready to start?

The second question frequently debated in flood post-mortems involves the decision as to whether or not bridges threatened by floods should be loaded with cars of heavy material. Several years ago (February 1949) this question was raised in the What's the Answer department of Maintenance. At that time two men who had had recent flood experience of that nature discussed the problem quite comprehensively. In effect those men replied that it is generally undesirable to load bridges threatened by high water, especially truss spans.

That some people do not hold to such views is evidenced in the public press which frequently prints photos of bridges loaded with hoppers, some of which are lost in the swollen streams. The captions under the photographs usually point to the "heroic" attempts that were made to save the bridges. The attempts were certainly heroic, but are they not frequently, by virtue of the dire results, wasteful of equipment and lading?

In discussing this aspect of the problem recently, a bridge supervisor admitted that he doubted the efficacy of loading flood-threatened bridges. However, he said he would continue to do it whenever possible. He defended such an anomalous action by saying: "If the bridge does not fail, you're a hero, or one who has done all he could if it does. You win in either case. On the other hand, should you not load the bridge and it fails for any cause whatever, you can be accused of not taking precautions to save the structure." Are such typical decisions always to be championed? Might not scientific study of the problem dispel doubt and clarify facts?

DURABLE CONCRETE

A Matter of Following Accepted Principles

THE last decade has witnessed a substantial amount of activity in repairing concrete railway structures, most of which have failed because of too much mixing water in the concrete, deleterious aggregates that caused pop-outs, excessive seepage of water from embankments, and volume change due to shrinkage.

Appalled by the number of concrete structures which are failing all over the country, one bridge engineer said: "I would like to be able to buy concrete with a guaranteed service life. For a structure that I wanted to last only 25 years, I would buy concrete guaranteed for 25 years and pay a certain price for it. Other structures I would want to last longer and I would be willing to pay more for concrete guaranteed to last 50, 75 or 100 years."

It is doubtful that such an arrangement could be put into effect. Not only would there be few contractors willing to deliver concrete mixtures on this basis, but also the mortality rate of contracting companies is high, there being only a few rare instances where such firms endure beyond the second generation. A guarantee from a company that has gone out of business would obviously be worthless.

But the railroads can obtain durable concrete by following the accepted principles for making concrete as outlined by G. H. Paris, railroad representative, structural and railways bureau, Portland Cement Association, in an address given at the March convention of the A.R.E.A. and published on following pages of this issue. These principles can be observed regardless of whether the concrete is purchased from a ready-mix concrete making company, or is mixed and placed by a contractor or by the railroad's own forces. All that is necessary is to follow the principles in designing the mix and preparing the specifications and then to have trained men checking the soundness of the materials and supervising the mixing, placing and curing of the mixtures. We are prone to criticize our predecessors for the concrete ills of today, but those men did the best they could with the knowledge of concrete that was then available. Can we say the same thing regarding our own performance today?

The knowledge and the necessary equipment for obtaining durable concrete structures are now available. But unless we apply them as we know they should be, the engineers of the future also will be faced with excessive deterioration of concrete and can rightly grumble and dub our generation as a careless, neglectful breed of builders.

SWAMPY TERRAIN encountered in line relocation project at large airport requires . . .

. . . Special Technique to Get Stable Roadbed

In relocating portions of the tracks of the North Western and the Milwaukee to make room for runway extensions at its new airport, the City of Chicago applied a modern principle of soil mechanics to achieve a stable foundation for the new roadbed where it crosses a swamp.

• When Chicago's Municipal (now Midway) airport became inadequate for handling the traffic flowing through that point, the city grasped the opportunity for bettering it's air facilities by acquiring by grant from the federal government a ready-made air field, known as Douglas airport, which, located about 20 miles northwest of the Loop, had been declared surplus. However, as originally built, Douglas airport, consisting of about 1,080 acres, was too small for the traffic to be handled and had runways too short for the safe operation of the heavy planes now in use by the air lines, and the jet planes of the Air Force.

The answer to this problem was the acquisition of some 5,270 additional acres of land contiguous with the existing field on which runways of adequate length could be constructed. However, before the additional property could be converted for use as an air field, it was necessary for the city to relocate portions of tracks crossing it of the Chicago & North Western and the Chicago, Milwaukee, St. Paul & Pacific. These tracks were relocated to a new route skirting the west side of the new field and paralleling an existing highway known as York road. After the airport was acquired by the city its name was changed to O'Hare Field, Chicago International airport.

The agreement with the two railroads was that the trackage to be built by the city would be at least equivalent in every respect to that which it will replace. It was further decided that the tracks would be entirely constructed in their new location while traffic was maintained over the existing trackage so that, by making quick connections at the ends, the tracks could be joined with a minimum interruption to railroad operations. The relocated line will have two tracks and will be operated jointly by the two railroads as a double-track line.

One of the problems encountered in this railroad relocation work was the construction of the new line over a swampy area about 1,800 ft. long. It was believed that, if embankment material was to be dumped into the swamp to form the new grading for the railroad, as is customarily the practice under such conditions, the material would very likely disturb the underlying muck and create a mud wave along the swamp periphery, thereby possibly displacing existing underground pipe lines and the foundation of York

Sand, dumped and spread to form a 3-ft. drainage blanket, allowed swamp muck water to percolate to the sides. Surface ditch (left), constructed for drainage of nearby area, flowed with water throughout construction of the sand blanket.

road, as well as disturbing and possibly damaging the foundations of homes built along the other side of the highway. It was also a foregone conclusion that an embankment built in such a manner would always be an unstable one and would require excessive track maintenance in the future.

Plan for Muck Consolidation

To forestall any such disturbances, it was decided to employ a modern principle of soil mechanics whereby the muck is compressed slowly by superimposing a sand blanket and a surcharge load over the swamp surface and introducing vertical sand drains, thus forcing the water content out of the muck through the sand drains and the drainage blanket to side ditches where the water would find its natural outlet. Such a technique is known to preclude any disturbance to the remaining muck of the swamp and also to provide a stable foundation of compressed muck solids upon which an embankment can be constructed.

It can be readily understood that the character of the sand used for these purposes is of prime importance. To be free-flowing it must have a minimum of fine particles. For the sand blanket, the specifications required that 100 per cent of the material pass a 2½-in. sieve as well as a No. 4 sieve; that from 60 to 100 per cent pass a ½-in. sieve; that from 30 to 100 per cent pass a No. 8 sieve; that not more than 20 per cent pass the No. 80 sieve; and that not more than 2 per cent pass the No. 200 sieve. Since the fines in this material were limited, the sand blanket would in general be loose and unsatisfactory as a working surface for heavy equipment; hence it was decided to place over the sand drainage blanket a working platform, from zero to 3 ft. in thickness and containing not more than 15 per cent of material passing the No. 200 sieve.

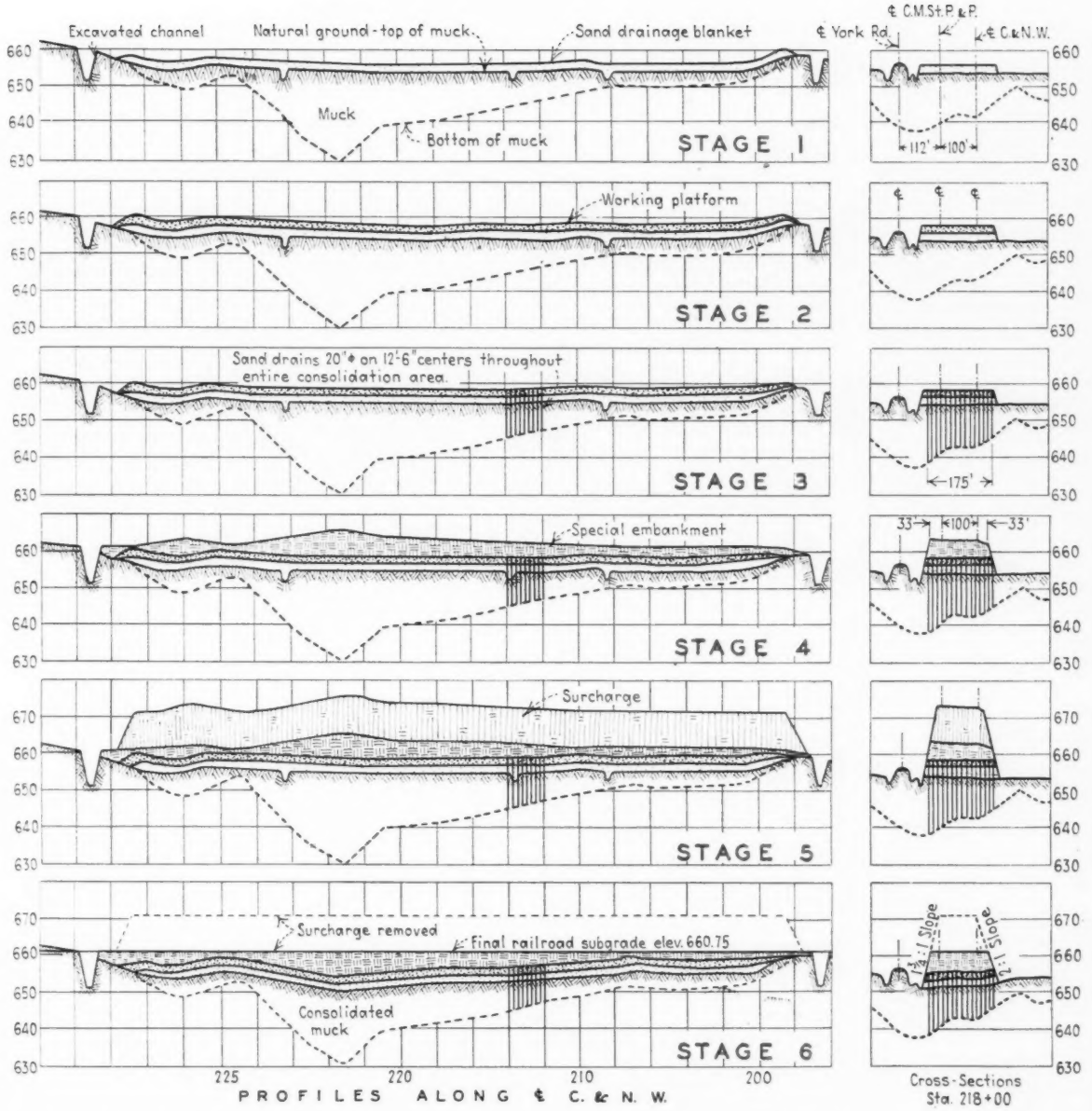
The sand used in the vertical sand drains was even more limited as to the fine particles that could be present, and ran more to the coarser sizes except that no large particles were permitted. The specifications required that 100 per cent pass a 1-in. sieve; from 80 to 100 per cent a ½-in. sieve; from 40 to 100 per cent the No. 8 sieve; from 20 to 80 per cent the No. 30 sieve; not more than 20 per cent the No. 50 sieve; and not more than 3 per cent the No. 100 sieve.

The procedure for carrying out this plan is outlined in the six work stages illustrated on another page of this article. Prior to Stage No. 1, however, it was necessary to construct a ditch between York road and the proposed railroad embankment and two ditch channels around the ends of the swamp. These ditches were incidental to the swamp consolidation work, being needed to handle the surface drainage originating from an area on the west side of York road, but they served a useful purpose by carrying away the water that percolated from beneath the sand blanket. Later in the project concrete box culverts on timber pile foundations are to be constructed at three other locations in the consolidation area for handling natural drainage and the two ditches are to be filled.

Preliminary borings had shown that the swamp muck varied from zero to 25 ft. in depth so that, with an expected shrinkage of from 10 to 20 per cent, a maximum settlement of about five feet could be expected. For checking the rate of stabilization 14 settlement platforms were used, which were placed on the surface of the muck before the placing of the sand blanket. These platforms were simple in construction, each consisting of two layers of 1-in. lumber nailed together to form a platform 4 ft. square, to which a 2½-in. pipe was attached by means of a screwed flange. As the sand blanket, working platform and surcharge were built up, measured extensions were added to the pipe to afford a means for keeping a continual check on the muck settlement.

Pore-pressure devices were also used as a means of checking the consolidation of the muck and to indicate the rise in pressure when additional loads were applied as well as the fall in pressure as the water left the muck through the sand drains and blanket. Hence, overloading and the possible collapse of the fill could be avoided. A time record was kept of the pressures and, when plotted, these showed a quick rise in pressure as the load was imposed, followed by an immediate rapid lowering of the pressure as the water escaped through the drains and sand

(*Continued on page* 482)



STAGE 1 —A sand drainage blanket, approximately 3 ft. in total thickness, was constructed of permeable sand over the surface of the swamp where the railroad embankment was to be constructed, with all trees, brush, roots, tall grass and weeds, having been removed prior to placement of the sand. For the purpose of observing any change which might possibly occur in the elevation of the top of the swamp muck, 14 settlement platforms, to which vertical pipe sections had been erected, were placed at strategic locations throughout the project. A line of control stakes was set immediately west of York road for determining any vertical or lateral movement that might indicate the creation of a mud wave.

STAGE 2 —To assure that the working surface would have a capacity adequate to support light construction equipment and to provide access for the pile driver which was to be used in construction of the vertical sand drains, a working platform up to 3 ft. in thickness was placed over the sand drainage blanket. This phase also included the installation of three pore-pressure devices for determining the change in pressure resulting from the imposed loadings.

STAGE 3 —Construction of vertical sand drains was done by driving a 20-in. hollow steel mandrel to the bottom of the muck, filling it with sand and withdrawing it, but leaving the sand core in place to serve as a water freeway.

STAGE 4 —The construction of a special embankment of pit-run gravel, later to serve as the actual railroad embankment, was the next step. The material for this embankment was deposited in layers not more than 8 in. in loose depth, with starting layers placed first at the location of the deepest portion of the fill. With the proper moisture content of the fill maintained by sprinkling, the layers were later compacted by rolling.

STAGE 5 —The placement of a surcharge load, 10 ft. in total depth but placed in successive uniform layers, each layer being approximately 8 in. in depth over the entire area, was to hasten consolidation of the swamp muck. This surcharge material was borrowed earth material which was free from all organic matter.

STAGE 6 —The surcharge was to be left in place for a period of approximately two months, the exact length of time being determined by the rate of subsidence as indicated by the settlement platforms and also by the pore-pressure measuring devices. During this subsidence period, the special embankment material had settled to the extent that its top surface had assumed the desired final subgrade lines of the proposed railroad embankment. The surcharge load was consequently removed, after which the ballast was put in place and the tracks constructed.

After being driven, the casing was filled with sand from an overhead skip. When casing was withdrawn, the sand was held in place by compressed air.

Cover at base of casing being closed prior to driving. Cover opened when casing was extracted.

blanket, after which the pressure readings decreased more slowly. It was apparent that the water escaped rapidly at first, then more slowly as the compaction of the muck took place.

A third control device used was a series of control stakes planted along the west side of York road, this location being the most critical. The stakes were planted to a true plumb and in a straight line so that any deviation caused by lateral movement would be discernible.

Working from the top of the sand blanket, the contractor experienced little difficulty in moving his equipment out on the swamp. A crawler crane equipped with a clamshell bucket reached forward to lift out the vegetation and organic matter before the sand for the sand drainage blanket was dumped from 8-yd. trucks. By welding an I-beam 12 ft. long, to each jaw of the bucket, the contractor was able to expedite the removal of this organic material.

As the sand was dumped, a crawler bulldozer leveled it to a depth of 3 ft. The weight of the sand blanket alone was enough to start the water flowing from the muck through the permeable sand blanket to the ditches, which carried a continual flow of water after the project was started.

For forming the vertical sand drains, the contractor used a crawler-mounted driver with a steam-actuated hammer operating in 60-ft. leads, a skid-mounted steam generating plant, a wheel-mounted air compressor having a capacity of 500 c.f.m., and a crawler-mounted overhead loader. When the driver had driven the 20-in. casing into a clay stratum at the bottom of the muck (driving was continued until adequate penetration in the clay was achieved) sand was picked up by the overhead loader and deposited into a skip attached to the driver. The skip was then raised and tipped to cause the sand to flow into the top of the casing. When filled with a sufficient amount of sand to a level slightly above that of the working surface, a gate at the top of the casing was closed and compressed air introduced to compact the sand and to hold it in column form while the casing was being withdrawn. The bottom of the casing was equipped with a flapper gate which would be in its closed position while the casing was being driven but would remain opened while the casing was being withdrawn.

The vertical sand drains were driven at 12½-ft. centers in each direction. The deepest drain was 25 ft.

The first layer of the special embankment material, which later became the railroad embankment, was applied to a loose depth of 8 in. by end dumping and spreading. It was then compacted by a sheepsfoot roller, after which succeeding layers were applied in 6-in. thicknesses, and compacted by rolling and wetting. The embankment material was applied first to the deepest portions of the fill. The height of the filling material was determined by the amount of muck settlement expected, so that as originally constructed the top surface of this fill varied in height in direct proportion to the depth of the muck (see Stage 4 of accompanying profiles). The placing of the filling material was carefully done and, if high pressures had been indicated by the pore-pressure measuring devices, or if lateral movement had been indicated by the control stakes, it was planned to have the filling work temporarily stopped until further consolidation had taken place. But, since no excessive pressures or lateral movement occurred, work continued uninterrupted.

The surcharge material was deposited to hasten subsidence and was placed in 6-in. layers without rolling. Each 6-in. material deposit brought about a 2-lb. rise in the pressure reading on the pore-pressure measuring devices. The pressure readings gradually lowered as the water seeped out through the sand drains. The layers of surcharge material were unloaded and spread until 10 ft. had been applied. This material was left in place for two months, during which time the muck material became consolidated and the special embankment assumed its desired final subgrade level. The surcharge was then removed and the tracks were constructed.

All work was carried out under the general direction of Ralph H. Burke, airport consultant for the City of Chicago. The procedure for handling the soil stabilization work was worked out in collaboration with Ralph B. Peck, research professor of soil mechanics, University of Illinois. The work was all done by contract, with the Arcole Midwest Corporation, Evanston, Ill., being the general contractor.

Partly to combat embankment erosion, but primarily to beautify station grounds and right of way, the Swedish State Railways has gone into the landscaping and nursery field on a large scale. The planting and care of the flowers and shrubs are handled by a railway horticultural department, assisted by the voluntary labor of station and roadway personnel.

Swedish State Railways Are Country's Biggest Gardener

Small ponds, such as the ones shown on this page, add serenity to station grounds

By Holger Lundbergh

• Travelers on the Swedish State Railways are delighted—and surprised—at finding every station, whether an imposing terminal or an obscure whistle stop, presenting an aspect of something between a luxurious flower shop and a well-tended private garden. Inside the depots, bright plants are apt to be found rising from pots and vats and spilling over the sides of baskets suspended from the ceiling or affixed to the tops of pillars or columns. Outside, carefully weeded beds offer a riot of colors, while trimmed hedges enclose garden spots, where, on well-raked gravel paths, benches are placed for rest and relaxation. Above them, shade trees spread their crowns. And over the outside wall of the station house, roses and other climbing plants are apt to grow in profusion. Even along the right of way, ramblers and perennials are planted to add to the delight of the traveler's journey, as well as for the purpose of preventing the banks from becoming eroded or being washed

Attractively designed flower beds adorn the grounds around . . .

. . . picturesque vine-covered stations all over Sweden

away by heavy seasonal showers.

Most travelers take this richness and beauty for granted, and have been taking it for granted for many years. Few persons, whether natives or foreigners, are aware of the fact that the horticultural activities of the Swedish State Railways go back to 1862, when a Dr. Per Olof Eneroth (1825 to 1881), a pomologist and amateur publicist, became employed as the railway's first head gardener, in which capacity he served for 10 years. It was he who laid the foundation for the system of plant schools and greenhouses, which today form the seemingly inexhaustible source of supply for the country's hundreds of railway stations. A pomologist by training, Dr. Eneroth made a specialty of fruit trees and berry bushes, which now constitute a very important part of the annual planting.

How is this unique service organized? The personnel, to start with, consists of a director (the incumbent, who has served since 1938, is Cösta Reuterswärd), eight head gardeners, of whom seven are in charge of an equivalent number of plant depots and one of whom works in the director's office in Stockholm, and 32 gardeners, stationed at the various sections into which the country's railway net is divided. Other personnel numbers 30.

Employees Maintain Gardens

It is obvious that this small staff would never suffice for the gigantic work that has to be done, month in and month out, through the years, regardless of the individual's skill, efficiency, and devotion to duty. What makes this service so remarkable is the fact the railway employees themselves are almost entirely responsible for the upkeep of the gardens and the renewal of plants and flowers within the depots. Station masters, telegraph operators, signalmen, track walkers, section men—all regularly do their share in their spare time to maintain each verdant spot in perfect shape. The annual budget for the railway administration's horticultural department is about one and one-half million kronor (about $300,000)—a small sum in itself and one which yields a more handsomely visible dividend than many other government agencies. However, in pointing out that less than 80 per cent of this sum is set aside for wages and salaries, the administration with justifiable pride, emphasizes that "in these costs has not been included the work which the employees themselves have performed for the care and maintenance of the gardens."

Swedes Have "Green Thumbs"

How and why is this still possible? I might venture a word of explanation. The Swedes are inveterate and respectful worshippers of flowers and every growing thing. For a long period of the year, the sun does only yeoman service in the north, and from the time the first days of the Swedish spring arrive, until the last days of autumn, the Swedes live outdoors as much as their work and the weather permit, and, in their outdoor life, working in a garden plays a vital role to hundreds of thousands. Swedish homes always surprise foreign visitors by the abundance of flowers and living plants that they display. When the Swede cannot be out of doors, he likes to bring nature with him into his living room. I think it can be said without much exaggeration that more or less all Swedes have a "green thumb," which accounts for their gardening adeptness.

Another explanation of this voluntary labor of love which the railway personnel performs, unsung and unheralded, decade upon decade, is that the Swedish public, by training and instinct, backs up their efforts and not only has an affection for flowers, but also has a neatness and tidiness which is rather innate and national. Of course, there are careless and negligent Swedes, who heedlessly break laws and city ordinances. However, taken as a whole, I think it must be said that the desire for cleanliness and order is very firmly rooted in the Swedish mind. Therefore, it is almost unheard of that flowers are picked from railway station rose beds; by the same token the walks beneath the spreading shade trees are not littered with newspapers, cigarette packages, candy wrappers, etc. Neither are the benches defiled by the carving of initials. With this kind of civic-mindedness and respect, it is easier for the employees to go about their

Quaint benches aesthetically placed along flagstone walks . . .

. . . add further to the beauty of the landscaped station grounds

daily chores more conscientiously.

In all there are seven plant depots scattered all over the country. In addition, there are smaller plant schools at the majority of the 36 railway sections. The plant depots have more than 4,200 frames, of which less than 2,000 are cold frames and the rest artificially heated by electric cables or hot water pipes. During the decade 1939-1949, the following number of flowers, bushes, and trees were planted: 1,800 fruit trees, 3,880 berry bushes, 2,000 leafy and coniferous trees, 10,600 park bushes, 12,710 hedge plants, 940 clinging plants, 80,000 perennials, 23,000 rose bushes, and 350,000 other flowers and plants. During the years, a total of about 110,000 fruit trees and 175,000 berry bushes have been planted.

Interior Decoration Too

Railway station gardening begins early in the spring, when three freight trains, of 70 cars each, fully loaded with bushes and plants, set out in different directions to distribute their floral wealth among the depots. In addition to waiting rooms and restaurants, the Swedish train ferries to Denmark and Germany, as well as the rest rooms of the personnel and hundreds of railway offices, are regularly supplied with cut or potted flowers from the plant depots. In recent years, a lively exchange of plants with foreign countries has been introduced, and new varieties are constantly being added.

The well-kept lawns and birch trees add immeasurably to the park-like appearance of station grounds. This scene at Nyland in northern Sweden is a good example

Civic pride, which is an inherent quality of the Swedish people, is what makes settings like this possible. Flower picking and defilement of property are almost unheard of

While a passenger locomotive is being fueled across the yards this three-unit freight locomotive gets fuel at enginehouse

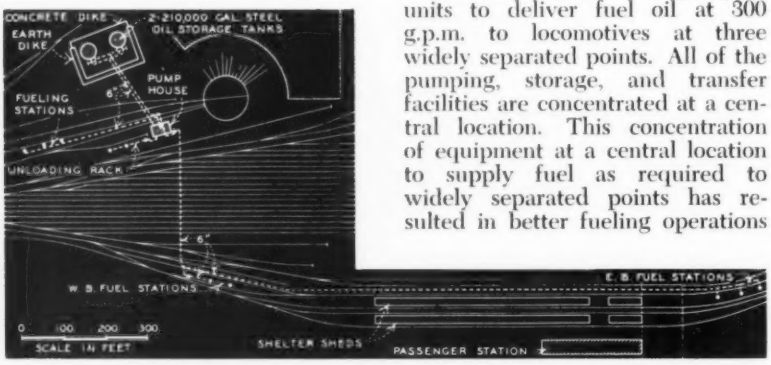
Three-Station Diesel-Fueling Lay-Out Has

Central Pumping, Automatic Control

In designing a diesel-fueling installation at Columbus, Ga., this railroad had to provide three stations at rather widely scattered locations. To meet the requirements a distribution system was devised in which two pumps, automatically controlled by a pressure system, deliver fuel oil to all outlets.

By W. H. Leavengood
Assistant Mechanical Engineer
Central of Georgia
Savannah, Ga.

• The Central of Georgia recently completed an installation of new diesel locomotive fueling facilities at Columbus, Ga., which utilizes automatic control of the pumping units to deliver fuel oil at 300 g.p.m. to locomotives at three widely separated points. All of the pumping, storage, and transfer facilities are concentrated at a central location. This concentration of equipment at a central location to supply fuel as required to widely separated points has resulted in better fueling operations and saved considerable expense in connection with the original installation.



This plan shows the layout of the engine terminal and yards of the Central of Georgia at Columbus, Ga. Note central pumphouse for the three fueling platforms

Main Elements of Lay-Out

The accompanying plan shows the lay-out of the facilities at Columbus. They consist principally of three fueling stations, each with a 300-g.p.m. printing meter installed ahead of the three outlets at each station; an unloading platform with space for unloading three tank cars simultaneously; two 210,000-gal. all-welded upright cylindrical steel storage tanks; two 300-g.p.m. rotary pumps with 20-hp. electric motors and allied equipment installed in a fireproof building; and the necessary piping consisting of 6-in. wrought steel pipe, placed underground and coated and wrapped to protect against corrosion.

Each fueling station contains three counterbalanced discharge standpipes, with 2½-in. fueling assemblies, spaced to accommodate

Liquid level gages, vents, frost-proof drain valves, are features of these tanks

multi-unit locomotives. These are located 300, 400, and 1400-ft. respectively, from the pumping units, with the two farthest stations being approximately 1800 ft. apart. The two pumps each discharge directly through an air eliminator and an expendable cartridge type filter unit. The pumping units are piped in parallel to and from common suction and discharge manifolds, so either may be used for any required operation, yet normally be left with valves set so both take suction from the storage tanks and deliver to the fueling manifold under automatic control. The flexibility of operation of this arrangement has enabled us to eliminate, for the present, the need for a third pumping unit. Two pumps, with intelligent scheduling of tank-car unloading operations, can provide 300-g.p.m. delivery to any two fueling stations simultaneously, this being adequate to care for our present requirements.

Piping at Storage Tanks

The two storage tanks are interconnected by two 6-in. pipes run underground and entering the sides of each tank 24 in. from the base, with each connection equipped with a gate valve. These two connecting pipes tee off midway between the tanks, and the lines run underground, one from each, to the pumphouse. One line forms the storage-tank filling manifold and the other the storage tank suction manifold. The use of separate filling and suction lines to each tank is necessary to allow one pump to remain under automatic control for fueling, while the other is being used to unload oil into the tanks, without disrupting operations.

The three fueling stations are connected by 6-in. pipe throughout. The intermediate fueling station, at the west end of the passenger shed tracks, is located on a 6-in. branch, 100 ft. long, off the main line which goes on 1100 ft. farther to the east-end fueling station. This arrangement allows the use of one meter installed ahead of each fueling station to accommodate all three outlets therein. Each pump is connected into the fueling main line as it passes through the pumphouse, and thus both pumps deliver to any or all stations as governed by the operation of the respective outlet valves. Any number of pumps could be employed with this manifolding arrangement.

An 800-gal. pressure reservoir is placed in the main distribution line where it enters the pumphouse from the two fueling stations at the passenger sheds. A small liquid relief line, returning to the storage-tank suction manifold, and a small compressed air supply line, from the control manifold inside the pumphouse, are connected into the bottom and top of this reservoir, respectively. One sight glass on the tank itself, and another piped inside the pumphouse, are provided to permit the liquid-air level to be checked at regular intervals.

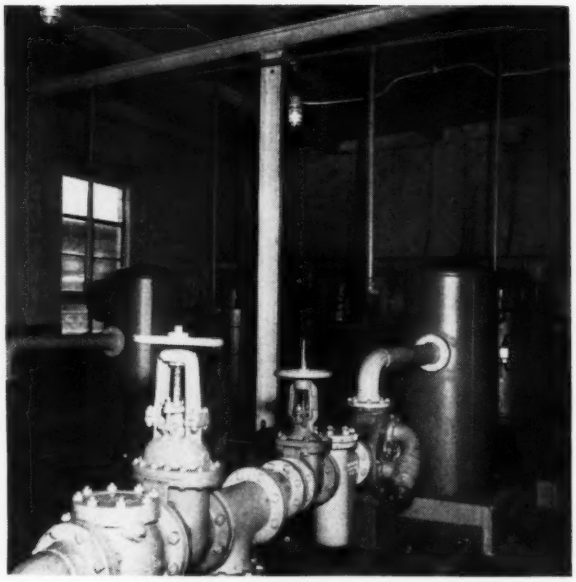
Control by Pressure Switches

Operation of the pumps under automatic control is accomplished through the use of pressure-actuated switches placed in the low-voltage control circuit of the pump motor starters. This is set up so that the opening of an outlet valve at any location will cause the No. 1 pump to start. Should an additional outlet valve be opened while the No. 1 pump is running, the subsequent pressure drop, resulting from the reduced flow through each outlet, will start the No. 2 pump and the delivery to the outlets will again be 300 g.p.m. to each. (Our standard practice is to fuel each unit in a locomotive individually so separate tickets can be kept for each unit.) When either outlet valve is again closed, the resultant rise in pressure stops the No. 2 pump, and the No. 1 pump is left running until the last outlet valve is closed. If only one outlet valve had been opened, only the No. 1 pump would operate. Through this control scheme a constant flow rate of 300 g.p.m. to each is maintained for the simultaneous operation of two fueling stations. If it were neccessary to have 300 g.p.m. delivery at three stations, it would only be necessary to include another pumping unit of 300 g.p.m. capacity and change the settings on the pressure switches accordingly.

Designing the Piping System

In the design of the fuel distribution pipe lines for a pressure-operated fueling system, it is necessary to keep the pressure drop, due to friction, in all main lines at a minimum; yet allow considerable drop through the individual standpipes and fueling assemblies *as desirable*. This allows the use of a nominal size fueling assembly, with its economy, and at the same time results in a fluctuation of pressure at varying flow rates through the entire system of sufficient magnitude to permit the range of pressure-switch settings required to obtain automatic control of the pump motors. However, it is very important that the size of the fuel-

E. W. Hasler, left, resident engineer, and the author stand beside 800-gal. pressure reservoir—the heart of the system



Interior of pumphouse showing one of the twin pumping units. Cut-off valves in foreground; main fuel manifold at the rear

ing assembly not be too restrictive; otherwise the operating pressures at the full flow desired will exceed hydrostatic ratings of the equipment installed in the system. For a desired maximum flow rate of 300 g.p.m. to each station, we selected 6-in. pipe for the main line, as its pressure drop due to friction at this flow is only 0.25 p.s.i. for each 100 ft. of length. This is quite small in comparison to the pressure drop through a complete fueling assembly at the same flow rate, and is desirable in order that pressure fluctuations with varying flow rates reflect principally from operation of the several fueling outlets.

The design of the system described herein was predicated on the assumption that we could expect about 270 g.p.m. delivery to any one fueling outlet with one pump operating, at a pressure not to exceed 100 lb., and preferably not above 50 lb., measured at the pump. Obviously, the pressure required for full flow to the farthest station will be somewhat higher than that required at either of the two nearer stations. It is to minimize this difference, and thus keep pressure operating ranges to a minimum, that it is further necessary to keep pipe-line friction loss on the main lines insignificant in comparison to that through the fueling assemblies. Preliminary calculations indicated that this difference in our system, at 270 g.p.m., would be only 3 lb., the total drop to the farthest station being 32 lb. and that to the nearest being 29 lb. In the case of the greater drop, this was determined to be comprised of the following pressure drops:

(1) Through filters and equipment in pumphouse (new filter cartridges)	8 lb.
(2) Through 1600 ft. of 6-in. steel pipe	4 lb.
(3) Through 3-in. meter	2 lb.
(4) Through fueling assembly	18 lb.
Total	32 lb.

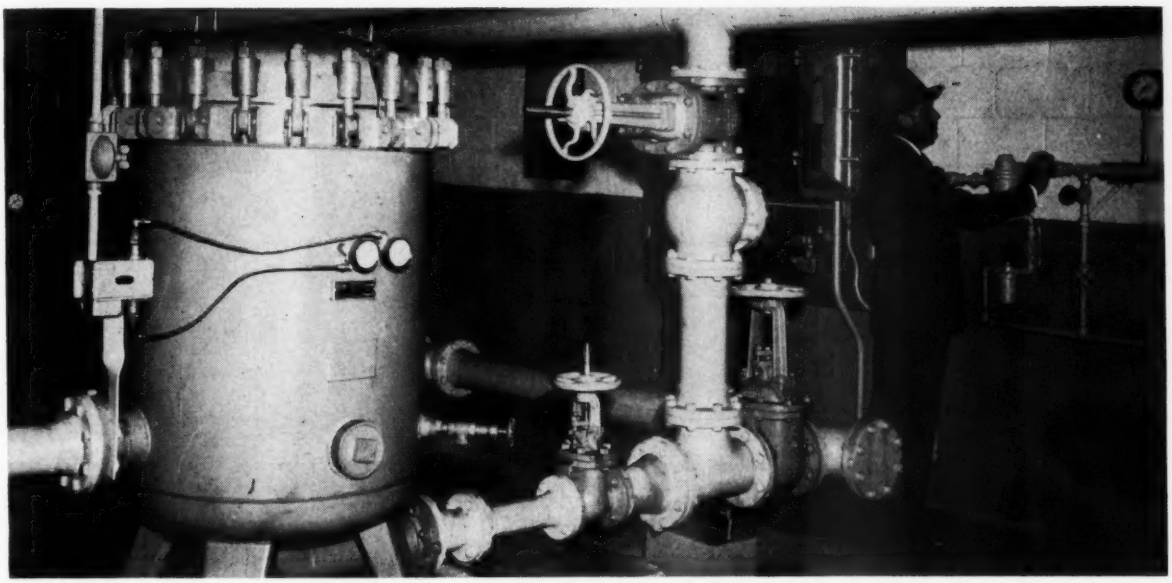
While these pressure-drop calculations are only an approximation based on well-known hydraulic friction coefficients and formulae, they are very important to the correct functioning of the system, and must be made with a fair degree of accuracy. Subsequent to placing these facilities in operation, actual operating pressures have been checked and were found to agree within 6 lb. on the maximum drop at 300 g.p.m. with new filter cartridges.

Planning the Control Cycle

The automatic control cycle was planned with the aid of the simple diagram shown, which is very helpful in visualizing the various pressures resulting from different conditions of operation, and for establishing the pressure ranges through which control switches must operate. The heavy line represents a plot of pressure, measured at the reservoir, against time. If the high-pressure cut-out setting on the No. 1 pump (control switch) were to be made at 50 lb., then the pressure at the reservoir would be 50 lb. whenever the system was not in actual use. This then is the static pressure of the system and all parts in the system must stand under this pressure at all times.

Following the heavy line to the right to the point where an outlet valve is opened; here we have a decrease in pressure as the liquid flows out of the system. When the pressure falls to the setting made on the low-pressure cut-in of the No. 1 pump, it will start to deliver oil at rated capacity, and the pressure returns to the normal operating value for full flow. It will remain at this value so long as liquid is allowed to flow at this same rate. If the outlet valve originally opened were now closed, the pressure would rise and the No. 1 pump would stop when the high pressure cut-out setting was reached.

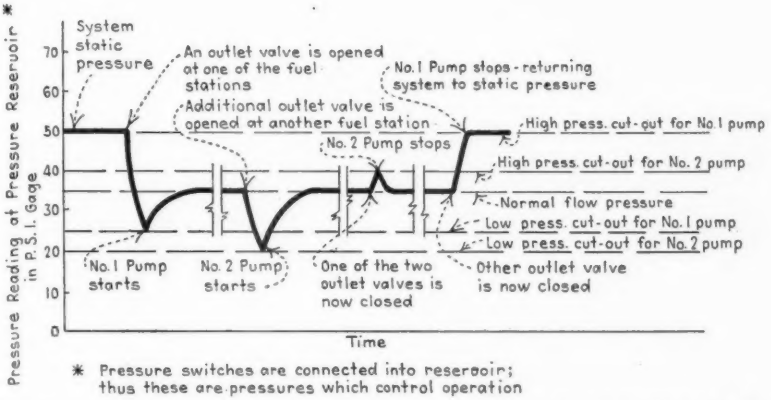
However, in the diagram we assume that, instead, an additional outlet valve is opened at another fueling station. When this happens the flow from the No. 1 pump is divided between each of the two outlets in operation. This results in the pressure again falling, because the pressure varies approximately as the square of the flow rate, and when the flow through each outlet is halved, the pressure is reduced by one-fourth. By making the low pressure cut-in setting on the No. 2 pump 5 to 10 lb. below that of the No. 1 pump,



Shown in detail in this view are connections of the pumping units to the main fueling manifold and the storage tank filling manifold. The electrical control board and the pressure switch manifold can be seen on the wall at the right

the No. 2 pump will now start when this additional pressure reduction takes place. The flow from the No. 2 pump is then added to that of the No. 1 pump and the pressure again rises back to the normal operating value, as delivery of each pump goes through each of the two outlets opened.

Thus, we have automatically started the second pump to compensate for the reduced flow through the outlets when the second outlet valve was opened. When either of these two outlet valves is closed, the pressure will rise. By setting the high-pressure cut-out on the No. 2 pump 5 or 10 lb. below that on the other pump, the No. 2 pump will stop first on this rise of pressure and the No. 1 pump will remain in operation. When the No. 2 pump stops, the pressure again returns to the normal operating value. When the other outlet valve is subsequently closed, the pressure again rises and the No. 1 pump is stopped in like manner, with the system standing under the static pressure of 50 lb.



Pressure drops throughout the fueling system and the normal and the high and low cut-out pressures for the two pumps are shown in this overall pressure diagram

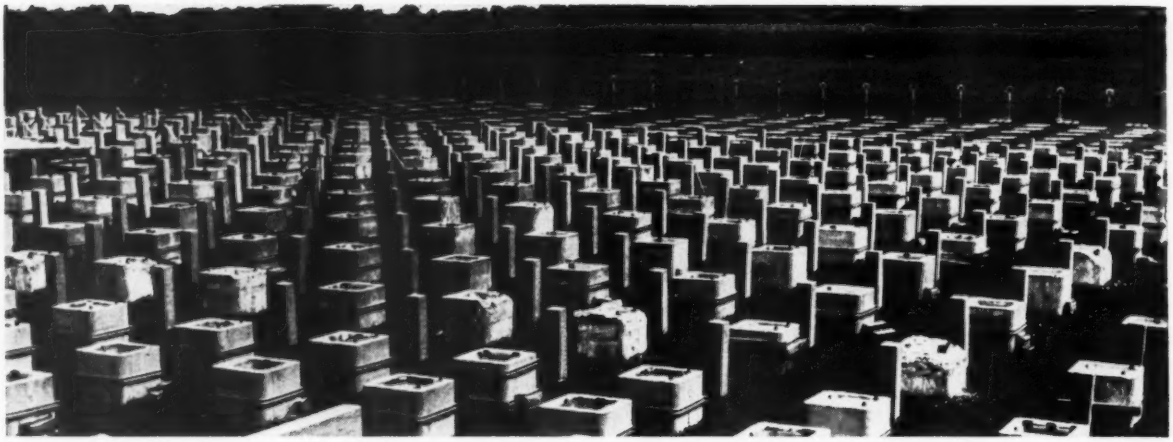
Pressure Receiver Necessary

In any pressure controlled system it is also necessary to have a large capacity pressure receiver or reservoir floating on the main distribution pipe line, which serves to damp out the surges and fluctuations otherwise resulting when valves are opened or closed and when pumps are started or stopped. If it were not for this damping effect on the complete distribution system, each variation in line pressure would either be so violent, or of such short duration, as to be unusable for actuating the pressure controls, which start and stop the pumps. This reservoir must be several times in volume the total installed rated delivery of the pumps in gallons per minute.

Operation of these facilities to date has been quite satisfactory, with great flexibility in their use being permitted with absolutely no manual attention for fueling other than connecting the nozzle to the locomotive and the operation of the outlet valve. The pumphouse itself is kept locked and is available only to the shift foreman, and the coal chute foreman who is in charge of fuel-oil transfer operations. When it is necessary to transfer fuel oil, the coal-chute foreman sets and re-sets all valves inside the pumphouse, so that when finished the pumps are placed under automatic control again.

These facilities were designed and constructed entirely* by company forces under the general supervision of H. G. Carter, chief engineer, and H. E. Hales, superintendent motive power. The design was directed by G. A. Belden, assistant chief engineer. The writer developed the mechanical features. The installation was co-ordinated and expedited by E. W. Hasler, welding and maintenance engineer, who acted as resident engineer.

*An exception was the erection of the two fuel oil storage tanks, which were furnished and erected by the R. D. Cole Co. of Newman, Ga.



This farm of concrete specimens of the Portland Cement Association, located west of Chicago, near Naperville, Ill., is for the purpose of making a long-time study of cement and concrete performance under exposure conditions which simulate those for retaining walls, abutments, etc. The specimens include air-entrained and non-air-entrained concrete.

Durable Concrete Costs Less

By G. H. Paris
Railway Representative,
Structural Bureau
Portland Cement Association

The basic principles that must be followed to obtain durable concrete are well known but are often neglected. One of the most important of these principles is air entrainment, but it still needs to be supplemented by sound aggregates, proper proportioning, good placing and finishing methods, and adequate curing. All phases of the subject are discussed in this article, which is reproduced from an address presented at the American Railway Engineering Association convention in March.

• The large number of old concrete railroad structures still in service today constitutes good evidence of the durability of concrete. Their long life and low maintenance, which will continue for many more years, are also ample proof that durable concrete is economical.

Both durability and economy must be built into the concrete during its manufacture. Both factors are inherent qualities of the material that cannot be changed once the concrete is made. They are readily obtained by observing certain well-established basic principles for making quality concrete. These principles include the use of sound aggregates, good proportioning, proper mixing and placing, adequate curing and air-entrainment. Each is important in producing quality concrete. If any one is neglected, then both durability and economy will be impaired.

Air Entrainment Is Important

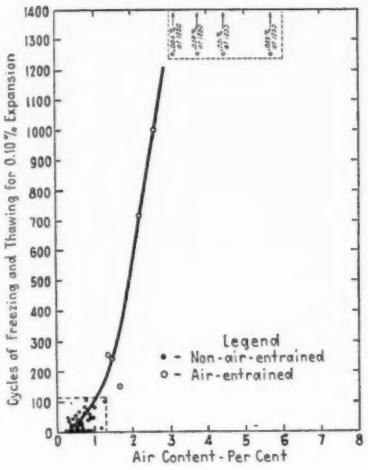
If we are to assure the durability of concrete and its economy, one of the most important objectives is to produce concrete that is frost resistant, since the cause of most of our concrete deterioration is weathering, particularly freezing and thawing. The most certain and easiest way to make concrete frost resistant is to use air-entrainment. Many people do not realize the importance of this basic principle and consequently it is sometimes overlooked.

Air-entrainment has been found to be a fundamental requisite of frost resistant concrete, that is, concrete which will resist the action of freezing and thawing when it is wet. It has been studied by many laboratories and organizations and has been used satisfactorily on thousands of jobs. The Portland Cement Association has been conducting an intensive research program to determine the effect of cement performance—including air-entrainment—in concrete. These studies, started over 10 years ago, are beginning to pay off in results for you. Important new evidence has been developed and our understanding of the question of cement performance has been vastly improved. Some conclusions, fully substantiated by evidence, can now be drawn from these vital studies.

The evidence comes from three different sources, namely, field studies, experimental studies in the laboratory, and fundamental studies of hardened concrete paste. The results of all three studies are in good harmony with respect to the conclusions. These conclusions are:

Conclusions Reached

First, that either modern or old-fashioned cements, of whatever clinker composition and fineness, ground by either the open or the closed circuit method, made into non-air-entrained concrete of normal water-cement ratio, produce concrete which is inherently vulnerable to freezing and thawing when it is water soaked.



The effect of air-entrainment on the resistance of concrete to freezing and thawing as determined by laboratory tests is shown in this graph. Shown vertically are the number of cycles of freezing and thawing required to produce 0.1 percent expansion in the concrete, while the air contents of the different concretes are shown horizontally. In the small square in the lower left-hand corner of the figure are shown all of the air-entrained concretes. Regardless of the composition or fineness of the cement, the cement content or the slump used, the highest frost resistance obtained from these concretes was but 100 cycles, provided no air was intentionally entrained. However, when air was entrained, the frost resistance increased abruptly and, with air contents in the recommended range of 3 to 6 per cent, concretes were obtained that withstood 1,250 cycles of freezing and thawing with expansion less than 0.1 per cent

Second, aside from the question of aggregates, we know of two ways—and only two ways—in which concrete can be made inherently resistant to freezing and thawing when water soaked. These are either: (1) to reduce the water content of fresh concrete to a point where the cement paste is no longer capable of containing freezable water (since this means not more than four gallons of water per sack, it is generally difficult to follow and is uneconomical); or (2) to use the proper amount of a suitable air-entraining agent in the fresh concrete to introduce "protective voids." Thus, air-entrainment is not regarded as a stop-gap measure but as a fundamental requisite of frost-resistant concrete.

Gives Results of Studies

The accompanying illustrations show a few examples of the information that was developed in these studies of cement performance and air-entrainment. A photograph shows a test farm of concrete specimens that has been under observation at Naperville, Ill., since 1941. In contrast to specimens made without air-entrainment, no specimens made with air-entrained concrete show any disintegration to date in spite of the severity of their exposure. In the case of the best concrete mixes, the differences between the non-air-entrained and air-entrained concrete are quite small, as both are still showing good performance. What differences there are, however, always favor the air-entrained specimens. In the case of the poor mixes—and unfortunately too much present-day construction still falls within this classification—the differences between air-entrained and non-air-entrained specimens are spectacular.

The graph depicts how frost resistance increased abruptly when protective air was entrained in the concrete. It also shows how concretes having air contents within the recommended range of three to six per cent were able to withstand 1,250 cycles of freezing and thawing without expanding as much as 0.1 per cent.

Thus it may be seen that, although there were variations in the frost resistance of concretes prepared with cements of various compositions and finenesses, these variations are insignificant in comparison with the very great increases in frost resistance that can easily and economically be produced by entraining the proper amount of protective air in the concrete.

Now, what does this all mean? Does it mean that all we have to do to produce frost-resistant concrete is to entrain some air? No, it does not mean that at all. We still must use the proper water-cement ratio. We still need sound aggregates and proper proportioning. We still need good placing and finishing methods, and adequate curing. It does mean, however, that we can produce frost-resistant, concrete which will withstand the most severe weathering conditions, and that such concrete can be produced economically and easily.

Other Factors Affect Durability

There are other factors besides frost-resistance, however, which affect the durability and economy of concrete. Field and laboratory studies by many different organizations have shown that, next to weathering, neglect of the basic principles of making quality concrete is most responsible for deterioration. This fact was verified by the recent field study of deteriorated concrete on railways by the Association of American Railroads at the request of the Masonry committee of the American Railway Engineering Association.

Results of that study, which in-

The significant variable in these specimens is that the one on the left was made with a non-air-entraining cement while the one on the right was made with cement ground from the same clinker except that an air-entraining agent was added.

Some roads are assuring that more durable concrete will go into their structures by instructing their men in the fundamentals of producing quality concrete, conducting short courses on the subject for two or three days, such as this one on the Norfolk & Western and Virginian, which was held only a few months ago. Similar courses have been held by the Chesapeake & Ohio and the Erie, and several others are planning to hold them. During these courses, all of the basic principles of making quality concrete are thoroughly reviewed, and the men actually have an opportunity to design mixes, make trial batches and perform slump tests.

School for Better Concrete

Railroads wishing to improve the quality of concrete going into their structures can take advantage without charge of a training course for key employees, which is now being offered by the Portland Cement Association. Of one to three days duration, as desired, this course may be given at any location convenient to the railroad personnel. It consists of lectures and demonstrations by trained field personnel of the PCA on all phases of concrete production. Additional information regarding the training course may be obtained from the nearest district office of the Portland Cement Association or from the general office, 33 W. Grand Ave., Chicago 10, Ill.

cluded 65 structures in different parts of the country, showed that the major causes of deterioration were due to the use of too much mixing water, poor materials, inadequate curing and poor workmanship. These factors can all be controlled by observing the basic principles of making quality concrete. One of the best ways of doing this is to provide good supervision and inspection on the job. This means control by men who know how to make concrete according to the best current practices and who have the authority to use whatever means that are necessary to obtain it. Thus, a good inspector is a sound investment in quality concrete and his value cannot be over-emphasized.

Another method of insuring more durable concrete is to instruct field men on the fundamentals of making quality concrete. Some roads are doing this by conducting short courses on this subject for two or three days, during which all of the basic principles involved in making quality concrete are thoroughly reviewed and the men actually have an opportunity to design mixes, make trial batches, and perform slump tests.

There is also need for closer liaison between the field and office forces. Many roads actually operate under a double set of standards—that is, the specifications prepared in the office and the construction practices used in the field are two entirely different things. Yet the quality of the concrete expected is judged on the basis of the specifications. Wishful thinking will not produce quality concrete. We must see that the specifications and basic principles are observed. Some roads are minimizing the problem by providing good inspection.

Another step is to provide the necessary equipment for controlling the manufacture of the concrete in the field. Materials are still too often batched by volume, slump is judged by "eyeballing" the concrete as it comes from the mixer, and vibrators, if used, are often misused because no one has taken the time to show the operators how to use them properly. If concrete is to be made correctly and according to the basic principles, then some equipment and supervision is needed to control the work.

Durability and economy are inherent factors of quality concrete, and still stem from the use of suitable materials, good proportions, proper mixing and placing, adequate curing, and air-entrainment. Close control will insure the most efficient use of the materials and will produce more durable concrete. Because the long life and low maintenance far outweigh any cost of applying the basic principles, durable concrete does cost less. This is demonstrated by the many old concrete railroad structures still in service today.

Here placing pre-cast concrete slabs at a Green Bay, Wis., grade crossing is an International T-6 crawler tractor equipped with a Hough ½-yd. bucket, employed by the Milwaukee Road for handling heavy materials and equipment for M/W work.

Supervisory officers in the engineering and maintenance departments of the railroads have a definite responsibility to do whatever they can to promote economy of operation by reducing loss and damage claims, preventing injuries to passengers as well as employees, avoiding interference with train movements, and similar measures. The various aspects of the responsibility are discussed in this article which is based on an address presented before the convention of the American Railway Engineering Association in March.

More efficient layouts at terminals will help expedite the movement of cars

How You Can Help Reduce Operating Costs

By W. T. Rice
General Superintendent
Richmond, Fredericksburg & Potomac
Richmond, Va.

• I would like to discuss some of the factors that have a definite effect on the economics of operation and their relationship to the engineering and maintenance personnel of the railroads. Some of these factors have a direct, while others have an indirect, bearing on the operating cost in which all of us are so vitally interested.

Loss and Damage

Engineering officers are usually so involved in the day-to-day problems of maintenance and construction that they lose sight of the definite contribution they can make in the claim-prevention program. It has been generally agreed that a majority of concealed damage to freight occurs as the result of rough handling in yards. However, we must admit that some of the impacts recorded on our through trains on the line of road frequently cause damaged freight. When the engineer of a long freight train finds it necessary to use his automatic brake valve, there is always the possibility of a break-in-two or impact due to adjustment of slack. For this reason engineering forces should be extremely careful that they do not set up a condition that will necessitate freight trains stopping unnecessarily out on the line.

The stopping of a high-speed freight train as a result of improperly planned maintenance work can frequently cause claim payments of a sizable degree. Only through the education of our foremen, and other personnel, who perform work that creates a track obstruction, can we sell the claim-prevention program to our maintenance people. Concealed damage is one of the top costs in our operation today, and the loss of traffic which results from this type of damage cannot be calculated, but we know it runs into vast sums.

Personal Injuries to Passengers

Let us consider the alleged injury suffered by passengers as the result of lurches of trains that may or may not be the result of maintenance conditions. Some passengers are very sensitive to train lurches and after the trip is completed it is not unusual to be informed of a personal injury that occurred while a train was rounding a curve or stopped at a station. This type of claim can usually be settled for the approximate cost of the railroad ticket. However, in some instances considerable litigation is necessary before a final release is executed. A sudden run off while raising track, or failing to keep the irregularities of line at a minimum while lining a curve under traffic, will give this type of passenger just the situation he needs in order to file a claim. Flagging a passenger train, which requires a sudden application of brakes, is nearly always accompanied by claims as result of personal injury. Maintenance forces should be conscious of this type of claim and so conduct their work that opportunities for accidents of this kind will be kept to a minimum.

Injuries to Employees

The obligation placed upon the railroads to provide a "safe place to work" has considerable influence on the overall cost of personal injuries. In addition to personal suffering, a "lost-time" accident is expensive to all concerned. The services of an experienced employee are lost, the production of the gang as a unit is reduced, and medical expense must be borne by the railroad or the employee. The loss of pay to the employee often causes hardships to his family. All too often the immediate supervisor of the injured employee is not fully informed as to the final settlement. This practice should be corrected if we hope properly to impress our supervision with the cost of accidents; they will in turn be impressed with the necessity of thorough and adequate safety education and practices. If you are not being fully informed as to the cost of each personal injury occurring to employees working under your supervision, I would suggest that you request this information. I am sure it will be illuminating.

The movement of freight and

passengers in the manner advertised to the travelling and shipping public is the only thing we have to sell. When this movement is interfered with someone becomes disgruntled with railroad transportation with a resulting unfavorable effect on earnings. The engineering forces must consider this element along with their plans for construction or rehabilitation work. All too often the desire to get a particular rail job completed or some heavy maintenance work progressed as economically as possible, causes the engineering staff to consider train operation as an evil and detriment to the production of the maintenance forces. All of us at one time or another have felt that operating people are unreasonable in their reluctance to co-operate in carrying out maintenance-of-way work by diverting trains or taking some delays which would greatly increase the productive output of the track forces.

This is a mutual problem, and often the maintenance-of-way work will justify diverting trains to other tracks, or, by other means, allowing the maintenance forces long uninterrupted periods of exclusive use of the track. This will require exacting and complete planning on the part of the engineering and transportation personnel in order that the best interest of the railroad will be served. However, one of our greatest criticisms from the shipping public is our failure to deliver the goods in the time advertised. You, in the engineering department, who are responsible for track maintenance, should constantly remember that, whenever you interrupt the normal flow of traffic, you are losing friends for the railroad.

In many localities traffic varies considerably with the different seasons of the year. Consequently the cost of maintenance can be reduced when the work is planned to utilize to the greatest possible degree the periods of low traffic volume. This practice will mean greater productivity on the part of the maintenance forces and will decrease expenses of the operating department in maintaining traffic. Certain work within yards or terminals, if performed during the busy seasons, will necessitate additional crews to keep the traffic moving currently. The same work performed at other seasons can be done without employing additional yard crews. Here again, we find the desirability of complete understanding and co-operation between the operating and maintenance personnel in the planning and execution of their work programs.

Proper Terminal Layout

The railroad industry is being constantly criticized for the slow movement of traffic through its terminals. We have done much to increase our road speeds, but still find room for great improvement in our terminal operations that will result in an increase in the average miles per hour from origin to destination of freight. Engineering officers should observe the system of operations in their local terminals, discuss the problems with the local operating supervision, and endeavor to plan a track layout that will correct some of the present bottlenecks in the terminal.

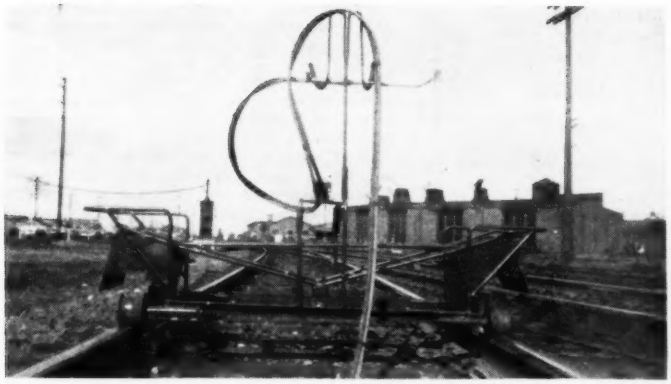
The matter of diverting trains to other tracks when carrying out heavy maintenance work is a mutual problem of both the maintenance and transportation departments

Study the communications, the lighting system, and some of the "doing it this way for 50 years" practices to see where improvements are in order. We frequently do not employ the engineering brain in a manner that will assist the operating people in solving what has heretofore been considered "problems of no solution." I, therefore, appeal to you to study your terminals in an effort to find ways and means of correcting the causes of delays to traffic, and I am sure the results of your efforts will react very favorably on the speed with which traffic will move through the particular terminal.

Good Maintenance in Terminals

A yard derailment due to poor track maintenance can be of untold cost by delaying the dispatching of freight trains. These delays frequently result in heavy claim payments on delayed perishable commodities, and send shippers to other forms of transportation. We often think of a yard as the point where used material can be employed at a considerable saving to the railroad, but at times this practice has been carried too far with the result that the savings in materials are far less than the cost of some of the resulting accidents. You have all heard of cases where rails with internal defects have been laid in yard tracks, and in some instances rails with transversed fissures have been considered safe for yard use. Here again, we are unable to see the forest for the trees, as yard delays due to faulty maintenance practices are always accompanied by considerable cost in lost traffic and adverse publicity for the railroad as a mover of freight.

The railroad men of today must remember that the railroad industry is badly in need of friends at this period of low net earnings with a high peacetime traffic volume. Each of us has a story to tell our neighbors, civic clubs, business associates, and the public at large concerning the importance of the railroad transportation system, and the fact that everyone who is a taxpayer is interested in the welfare of the American railroads. I urge each of you to do your part to acquaint the American public with the railroad story in an effort to secure their sympathetic understanding of our problem, which will, in turn, give us their support to help overcome some of the odds under which we work today.



With Baffle Boxes on a "See-Saw"...

Baffle boxes are held (upper left) in a balanced position when they are not in use, and are lowered to the rails (left) with pipe handles. The baffle box carrier in operation is shown above.

. . . Rail-End Hardening Production Goes Up, Costs Go Down

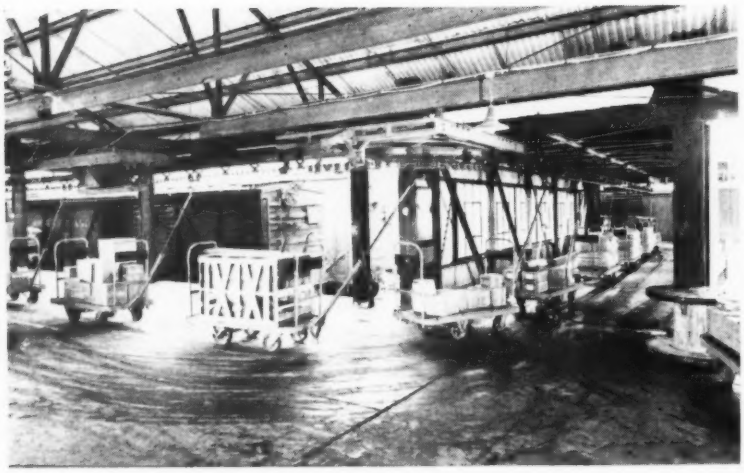
Dual equipment, usually moved from joint to joint by hand, is placed on a light, four-wheeled carrier which speeds up the work and saves two men or $24 per day.

• In end hardening rails, the back-breaking work of "horsing" hot bafflle boxes up and down the track has been converted on the Great Northern into what could almost be called "child's play" by a simple, effective device for carrying the boxes. This carrier consists of a lightweight metal frame made of pipe and angle iron and mounted on four flanged dolly wheels, 3 in. in diameter, set so that two will ride on each rail. The baffle boxes are mounted at opposite ends of a separate triangular frame which fits inside the carrier frame on which it is supported midway between the rails. The frame pivots at its support point so that the baffle boxes can be raised or lowered in a "see-saw" manner. When the carrier is not being used or when it is being moved, two springs hold the baffle boxes in a balanced position clear of the rails. Each baffle box is fitted with a pipe handle which is used to push the box down onto a rail joint. As one box is lowered, the other is raised.

Tanks Carried Ahead

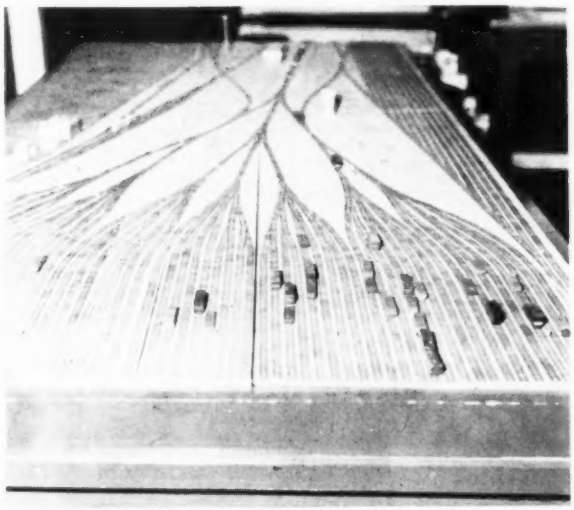
A valve is fastened to the upper part of the carrier to control the oxygen-acetylene supply which flows to the valve through a hose looped around a hook on a metal staff attached to the carrier. This hose leads from the tanks of oxygen and acetylene which are transported on a push car just ahead of the baffle-box carrier. Each baffle box contains two firebricks which, when the box is lowered over a rail joint, rest on the top of the ball of the rail, leaving 2½ in. of each rail end exposed for hardening. The carrier is so light in weight that two men can easily set it off or on the track in a matter of seconds to allow trains to pass.

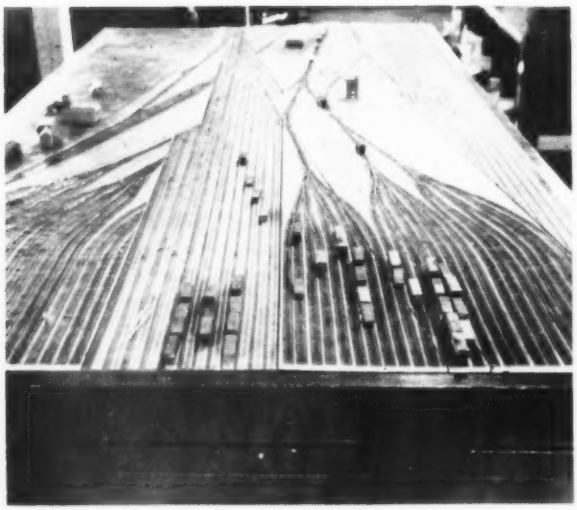
In the end-hardening operation, two laborers shove the push car carrying the oxygen and acetylene tanks just ahead of the carrier. The welder in charge of the end-hardening work pushes the carrier and spots it at a joint. He then lowers the baffle box on that side so that the firebricks rest on top of the rail. Holding the valve handle in one hand, he uses a welding torch in the other to harden the rail ends. When the joint is finished, he shuts off the valve, raises the baffle box to travel position, shoves the carrier ahead a half rail length and then lowers the baffle box on the opposite side of the carrier onto the rail joint and repeats the procedure. A laborer follows the machine to extinguish any fires in the ties. Thus, using two men less than the number required by the old method employing individual boxes, the Great Northern has gotten more work done while saving the cost of the carrier in a few days of operation.



LEFT—An endless chain tow conveyor hauls the loaded platform trucks from the main freighthouse across a lift bridge to an island platform at this freight transfer terminal recently constructed by the Rock Island at Kansas City, Mo. This conveyor will handle 100 trucks of 2,500-lb. gross weight at synchronous speeds of 150, 100 or 50 ft. per min. An important feature of this conveyor system is the fluid coupling in the drive which not only protects the system itself from damage but also provides slow acceleration when starting, thus eliminating jerking of the trucks and spilling of the loads. The conveyor line is kept taut by the take-up mechanism seen at the angle where the conveyor turns to cross the lift bridge. Another feature of this conveyor is that it is automatically disconnected when the bridge is raised for switching purposes over the four tracks between the freighthouse and the island platform. Derails on these tracks are locked while the bridge is raised. The floor is of hardened concrete

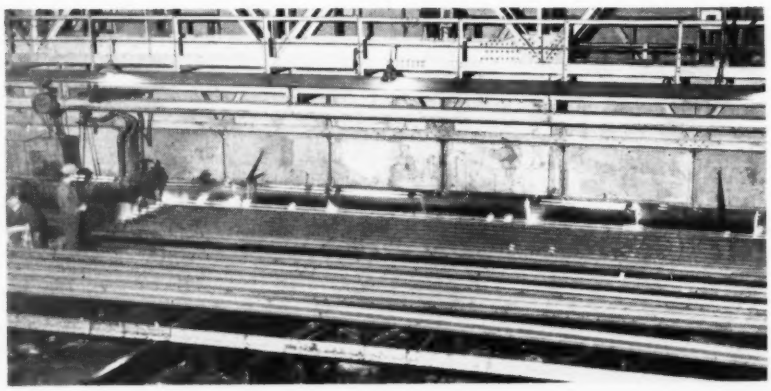
News Briefs in Pictures . . .





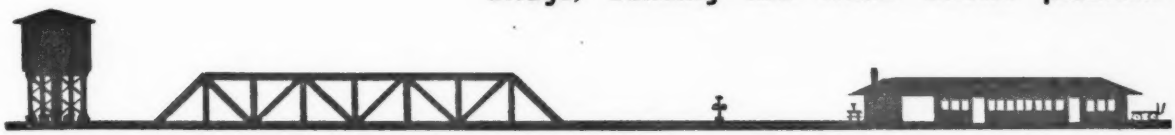
When the E. J. & E. was faced with a project of altering its Kirk yard at Gary, Ind., from a flat-switching to a retarder classification yard, the road decided to build a scale model to make it easier to explain how the progress of the construction work would affect switching operations. The model was made in two sets of 29 parts each, one set showing the yard as it appeared before any changes were made and the other after the work is completed. LEFT—By removing one or more parts from the first set and replacing them with comparable parts of the second set, a clear conception of the changes could be shown. ABOVE—This view shows the model after all parts were changed out to show the completed yard

RIGHT—More than five years of production have followed the initial installation of the equipment currently used for the end-hardening of rails at the Steelton plant of the Bethlehem Steel Company. With the addition of a fourth end-hardening battery, shown here, the plant is now in the position to end-harden approximately three-fourths of the normal output of rails. A fifth unit, plans for which have been completed, will provide a capacity of practically 100 per cent of the rail output. Thirteen different rail sections can be accommodated by each unit. The first battery was started in October 1946. A second unit went into production in April 1948, and a third in February 1950. Description of early operation was published July 1948 in *Railway Engineering & Maintenance*



WHAT'S THE ANSWER?

An open forum for maintenance men on track, bridge, building and water service problems



What to Do Before Welding Rail Ends

Between what minimum and maximum limits of batter does welding of rail ends produce the most effective results from the standpoint of economy and other factors. What preparatory work should be performed before any welding is done? Explain.

Preparatory Work Essential

By F. J. CAVAN
Division Engineer, Lehigh Valley, Buffalo, N. Y.

Great economies and many other benefits can be realized in track maintenance by adequate care of rail, which naturally includes the proper attention to rail-end batter. Excessive batter results in shock, or pounding, at the joints, ultimately producing low joints, loose bolts, bent rail, and excessive joint-bar and tie wear, all of which have a cumulative pumping effect on the ballast. This is the beginning of poor riding track, which will continue to be more costly to maintain each year, until the batter condition is corrected.

Rail ends are not welded on our main-line rail that is programmed for renewal in five years. Under other circumstances we have found it beneficial to weld rail ends having a batter in excess of .025 in., and have successfully corrected maximum batter of .07 in. However, in such cases, we carefully examine the rail to assure that it has not been permanently damaged because of this excessive batter. There is no advantage in welding permanently kinked rail, or rail with too many imperfections, such as engine burns and heavy corrugations on the running surface of the rail head.

The success of rail-end welding depends a great deal on the preparatory work done before this program is set up. A close inspection is made of the territory to be welded. Readings are taken on the amount of batter and amount of splicebar wear to determine if worn splices should be replaced with reformed bars. Rail-end openings are respaced, bolts are tightened, and in many cases, new bolts and nut locks are applied. Joints are resurfaced, and alinement is corrected. If all this preparatory work is carefully performed, rail-end welding will prove successful and will add many years of additional service to the rail.

When electric-arc welding methods are used, pre-heating and post-cooling are very essential for best results. With proper preparatory work, we have had equal success with both the electric-arc and oxyacetylene welding of rail ends.

Grind Off Small Batter

By TRACK SUPERVISOR

We have found by experience that battered rail ends can be repaired by any of three normal methods, depending largely on the extent of damage. Rail ends with light batter—1/64 in. or less—can best be improved by grinding. It is economical to weld rails having batter from 1/64 in. to 1/16 in. and, in some cases, those with a batter of 1/8 in. When rails become battered to a greater extent than this, they should be removed from track and cropped.

Unless a considerable amount of work is done preparatory to weld-

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Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, *Railway Engineering and Maintenance*, 79 W. Monroe St., Chicago 3, and reach him at least 30 days in advance of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the August Issue

1. What conditions, if any, justify the anchoring of track to prevent its being carried off the roadbed by high water? What anchoring methods are most effective? Explain.

2. What are the advantages and disadvantages of rigid-frame construction in railway buildings? Under what conditions or for what types of buildings is it applicable? Explain.

3. Under what conditions are railroad-owned portable bituminous mixers desirable for use in patching or renewing highway grade crossings? What economies might result? Should the mixer be spotted at the job site or elsewhere? Why?

4. What are silicones? To what extent are they adaptable to waterproofing railway masonry? For what other uses are they suitable? Explain.

5. On main tracks what factors determine on which side of the track switch stands should be placed? In yards? Explain.

6. In the event of a shortage of chromates, what alternate types of corrosion inhibitors are suitable for use in conditioning water for diesel locomotive cooling systems? What are their advantages and disadvantages? Explain.

ing or grinding rails ends, the best possible results cannot be obtained. To weld or grind rail ends on low pumping joints is a complete waste of time and money. The most economical, longest-lasting and best-riding results are obtained if the joint is first put in as good condition as possible before any railhead repair work is performed. If necessary, bars should be renewed with oversized, reformed bars. It goes without saying that bolts must be tightened and expansion gaps adjusted prior to welding or grinding operations. Finally, the track must be spot surfaced with particular attention being given to the surface and cross-level at all joints at which the rails are to be welded. Naturally, in doing this work, ballast at joints must be cleaned by hand if necessary, so that it will drain adequately. After the rails are welded it is also a good policy to tighten loose ties that have developed after the surfacing work. By careful attention to such normal details, the best possible improvement to both the rail condition and riding qualities is assured.

Measure Batter on Each Rail

By A. A. SHILLANDER
Assistant Engineer, Illinois Central, Chicago

Before deciding to build up rail ends, we measure the depth of batter on each end separately by using a taper gauge and an 18-in. or 24-in. straight edge. Rail ends having a batter of 1/32 in. to 3/64 in., at a distance of ½ in. from the rail end, should be built up. The amount and character of traffic is also considered. The difference in height of rail ends should also be measured to show the wear of fishing surfaces, especially of the joint bars. In track having only one-way traffic the difference will be appreciable. Under such circumstances the joint condition can be improved by reversing the joint bars.

If the rail ends have been hardened into a higher range of hardness, they will not wear down as rapidly as other sections of the rail head, and hence will cause rough-riding track unless they are ground at the proper time. This will often minimize the need for subsequent welding. In all cases, it is the general practice to tighten bolts and tamp low joints before any grinding or welding is done.

What About Use of Secondhand Ties?

To what extent, if any, should serviceable secondhand ties released from main tracks be used in yards, sidings, branch lines and newly constructed yard tracks? What are the advantages of this practice? The disadvantages?

Saves Plate-Cut Ties

By B. D. HOWE
Chief Lumber Inspector, Louisville & Nashville, Louisville, Ky.

Many serviceable secondhand crossties released from main tracks because of mechanical damage will give satisfactory service that can be economically justified when reused in branch lines, yards, sidings and, to some extent, in main tracks.

One railroad has for several years followed the practice of turning over and reusing plate-cut ties on main-track tangents to the extent of about four per 39-ft. rail. Similar ties are reused in branch lines, yards and sidings to the extent of about eight ties per 39-ft. rail. This practice has resulted in extending the service life of these ties six and more years without detriment to the general maintenance condition of the tracks in which they were used.

In newly constructed tracks, about one-third of the ties used are secondhand. This practice has the advantage of staggering renewals in future maintenance, thereby preventing renewals that are almost out-of-face, as might be the case when all ties used are the same age.

Extreme care should be used in selecting for reuse only those ties thoroughly sound and well treated. The obvious advantages of this practice are largely economic plus the fact that materials are conserved. There are no apparent disadvantages.

Not Always Advantageous

By L. P. DREW
Assistant Chief Engineer, Union Pacific, Omaha, Neb.

The economy of using secondhand ties depends on their condition when removed. In many cases, ties that still have several years of service life are removed from main tracks. This is done because it is the judgment of the track supervisor that such ties are not suitable for high-speed track, and that it is wise that they be transferred to sidings, yards and light-traffic branches. The cost of that second installation often exceeds the value of the service life still remaining in the tie. On the other hand, when ties are released from tracks that are abandoned, the service life still remaining fully justifies their transfer to other trackage.

There are three advantages to the practice of reusing ties: (1) To reduce the cost of maintenance of secondary tracks; (2) to reduce the cost of construction of unimportant trackage; and (3) to utilize to the fullest extent all of the available materials.

There are also two disadvantages, namely: (1) The service life remaining in a secondhand tie after its removal is not the same as before, because the removal destroys part of its available life; and (2) the cost of transfer from one track to the other often exceeds the value of the remaining service life.

Cost Too Much To Install

By N. F. ALBERTS
General Track Foreman, Chicago, Milwaukee, St. Paul & Pacific, Chicago

Secondhand ties released from main tracks have been used quite extensively for many years in secondary or yard tracks. This practice had some merit and was quite profitable, as far as getting the most service out of ties is concerned, when labor costs were rather low, and when the slogan among track gangs was to renew 8, 9 or 10 ties per man-day. However, with the great increase in labor rates and the type of labor now available in many localities, the matter of handling ties for renewals has become a costly item and must be considered from many angles.

First of all, consideration must be given to the service life remaining in ties released from main tracks. Ties having a service life of

5, 10 or 15 years are sometimes recovered from abandonments. The practice of placing these ties in sidings or yard tracks for further service has a great deal of merit. If new ties are used along with the secondhand ties, it is good practice to place the secondhand ties between the new ties and not in a group.

The practice of using, in newly constructed yard tracks, secondhand ties having a limited service life of 3 or 4 years has proven costly, because they do not stand up. Where they have been placed in larger groups, they have been known to cause track to become unsafe for operation in 2 or 3 years. In such cases, it must not be forgotten that the labor cost for renewals is considerably higher by virtue of traffic interferences than the cost of installation when the track is being constructed without traffic interruptions.

Ties removed from main tracks because of mechanical wear, splits or other damage but still suitable for further use, should be turned over. The use of such damaged ties should be confined to the ends of stub tracks, to storage tracks where engine movements are infrequent, and where the track can be jacked up to facilitate their installation at the least amount of labor. It is not good practice to reuse ties having only 2 or 3 years of service or when their handling involves digging the old ties out and digging the usable ties back in.

Where an out-of-face ballasting operation takes place on main track, no ties should be left in the track having a service life of less than three years. It has been the practice of many railroads to defer tie renewals in yard tracks until about two-thirds of the existing ties in track become well rotted out and then raise the track out of face while making heavy renewals. There is some question whether this practice should be condoned.

Labor cost for handling tie renewals has become expensive, especially if done by small section crews using ordinary hand tools. Where extra gangs are employed for tie renewals, the cost of labor can be greatly reduced by employing labor-saving devices such as Woolery Tie Cutters and other approved mechanical devices for handling tie renewals.

Multiple Lines of Culvert Pipe

Under what conditions, if any, should two or more lines of large-diameter culvert pipe be installed in a fill when drainage requirements indicate that one pipe is insufficient? What factors govern the choice of drainage structure in such circumstances? Explain.

Experience Best Guide

By A. P. Crosley

Assistant to Engineer Maintenance of Way, Reading, Philadelphia, Pa.

It is assumed that the question refers to a situation where experience has shown that the existing pipe or drainage opening is inadequate to handle the drainage situation properly. This condition arises with considerable frequency, especially where developments adjacent to the railroad have taken place which cause greater runoff than anticipated at the time of the original construction. In cases of this kind, although there are formulas for such studies, the required waterway opening is more often likely to be determined from actual experience. Even under these experiences, it is well to add a factor for still future development should the need arise.

Under these conditions, two alternatives must be considered: (1) To remove the present culvert and substitute a larger one; or (2) provide another opening. In the latter case, pipe is most often considered for its usual ease of installation. One of the most important considerations in determining whether to install a pipe, either by jacking or by the open trench method, is to consider the height and character of the fill. Where the height is sufficient and the nature of the material in the fill is such as to give stability, the jacking of an additional pipe will usually be found cheaper than any other method because it can usually be done without interference to railroad traffic. This method also causes the minimum disturbance of roadbed, resulting in little or no subsequent settlement.

We have found that pipe can be placed even under adverse circumstances in a satisfactory manner. One of the worst conditions we have encountered involved a twin box stone culvert that had collapsed. In this case, it was necessary to put a pipe on the same line as the culvert, removing the existing stone culvert as the pipe was advanced.

Use Right-Triangle Nose

By Hubert E. Snyder

Managing Director, Toncan Culvert Manufacturing Association, Inc., Cleveland, Ohio

When the distance from a roadbed (finished subgrade) to a steambed will not permit the use of a single line of pipe large enough to carry the maximum run-off, two or more parallel lines are justified. There are only two objections to multiple lines: (1) They cost a little more than a single line of equivalent capacity; and (2) the "pier" of earth between them might be the means of stopping debris which would normally be carried through a single line.

Cost of material is only one of several factors involved in the determination of the type of structure suitable for any specific purpose. It frequently happens that the cost of an adequate foundation, the cost of transporting materials to the site, and the value of construction time saved are the controlling factors.

In a multiple-pipe installation, the possibility of debris stoppage can be reduced by proper separation of the lines of pipe and, further, by the shape of the upstream end of the "pier" or headwall. The minimum distance between parallel lines of pipe should be one-half the pipe diameter. This distance is dictated by the need for room in which adequately to consolidate the fill between the lines. A greater distance reduces the consequences of debris stoppage. This applies to two or more lines.

While the conventional treatment of the upstream end of the culvert is a flatface wall, with or without a V-shaped nose between the lines of pipe, it is suggested that a right-triangle shaped nose, with one leg parallel to the axis, and in line with the side of the pipe, would reduce the chance of debris stoppage by causing unequal approach velocities along the leg and

the hypotenuse. (This is proposed where the distance between lines is less than the diameter of the pipe).

For such situations as defined in the question, arched pipe has been developed. It combines the principles of the pipe and arch and provides maximum capacity where height is limited. Frequently, a single line of arched pipe will fill the requirement of capacity within the available headroom, inasmuch as it is available in many sizes, up to 218-in. span and 139-in. rise, having a cross-sectional area of 165 sq. ft.

Not Always Advisable

By Assistant Engineer

Multiple-pipe culverts of large diameter will generally be installed in a fill where drainage requirements indicate that one line of pipe is insufficient and the conditions of the streambed, the velocity of stream flow, and the character of the burden found in the water is favorable. Multiple-pipe culverts are not generally desirable: (1) In wooded country or country with steep rocky slopes; (2) in the vicinity of industrial centers where considerable debris finds its way into streams, or (3) in northern climates where ice moves in the streams. At such locations the division walls trap the debris which must be removed periodically at considerable expense. During flash floods such impediments have been known to cause wash outs.

An eastern railroad has made excellent use of multiple-pipe culverts where deep side-ditch, track-drainage projects have been built. These culverts carry water under tracks and, in some instances, have three to four feet of fill over the top. Other desirable installations have been made in regions where flood-control projects have been built, and in the desert sections where normally dry streambeds are crossed. Many small bridges and wood trestles have been effectively replaced by multiple-pipe culverts. However, where the use of multiple-pipe culverts is contemplated in some states, approval of regulatory water-power or conservation bodies must be obtained before construction is begun.

When physical conditions are favorable to the use of this type of construction and its use is permissible, the following characteristics govern the selection of the kind of pipe to be used: (1) Ample strength for required service, bearing in mind the loading conditions due to class of traffic and depth of fill over the pipe, the bearing conditions under the pipe, and the corrosive effects of soil and water, (2) durability consistent with obsolescence or reconstruction, (3) economies, considering price, transportation, installation, headwall construction and maintenance; and (4) freedom from traffic interference—adaptation to removal and reinstallation when necessary.

Methods of Cleaning Station Floors

What methods and types of materials should be used for cleaning concrete, tile or terrazzo floors in stations or other railway buildings? What precautions are necessary?

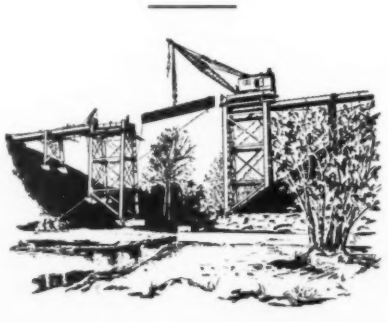
Use the Best Cleaners

By Assistant Engineer

The types of materials used for cleaning concrete, tile, marble, or terrazzo floors in stations or other buildings are numerous, but the methods are generally similar. Floor-cleaning processes and materials will vary with: (1) The degree of cleanliness demanded; (2) climatic factors; (3) geographical location; (4) condition of floors; and (5) density of traffic. Floors usually receive more wear and abuse than most other parts of a building. In large buildings the expense of cleaning floors is comparable to that for any major item of maintenance. However, when the floor surfaces are terrazzo, tile, marble, or concrete, a lot of money has been spent to provide a durable, fireproof, heavy-traffic bearing surface that warrants careful maintenance to insure that it presents a decorative appearance at all times.

Station buildings having dense traffic patterns will generally require water cleaning, with or without detergents or sequestering agents. A man with a mop spreads the water containing the cleaning materials over the floor. This reduces the surface tension, dilutes the dirt, and begins to float the soil off the floor. When the cleaning materials work properly and soften the water, the mop slips smoothly and the worker covers the area easily. When the wrong materials are used, the mop lacks easy slip, the man works harder, accomplishes less, and the job is unsatisfactory.

No one material or compound is good for all purposes. An ideal compound is one that will provide the maximum cleaning desired, leave the floors bright and free from streaks of residues, will have no corrosive effect, and will produce no slippery or gritty surface—all at a minimum expense. There is sharp disagreement as to the best compounds to use. These include floor scrub soaps in liquid or paste form, powder cleansers, and synthetic detergents of the sulfonate groups. Many railroads compound custom cleaners for their particular jobs.



Most scrub soaps are made of vegetable oils and potash with or without pine oil, alkalies, or water softeners. Potash oil soaps dissolve easily, are harmless to most surfaces, rinse quickly and leave no residue. Linseed oil is widely used. It possesses the advantage that free oil in the soap remains on the floor, oxidizes and forms a thin, protective coating. Use of a low-titer fatty material produces a cleaning agent which will leave little residue or soap streaks. The action of this soap is more of an emulsifying reaction than a surface-tension reducing agent.

In lower-quality soaps, resin or caustic soda is used to replace some of the potash. These agents make a soap which is less soluble, less sudsy, and harder to rinse. Animal fats are also used in place of vegetable oils, the fatty acids being saponified into soap. These soaps

tend to leave a thin film on the surface after washing. The pine oil used is a deodorant, imparting a distinctive scent to the compound. It has slight antiseptic qualities.

Powder cleaners have become widely used because of their economy in shipping and handling. They are a mixture of trisodium phosphate, soda ash, sodium sesquicarbonate, ammonium chloride and sodium bicarbonate. The pH value of these compounds is high, running from 9 to more than 11. They should only be used where such high alkalinity is not harmful to the surface to be cleaned. Trisodium phosphate is a good cleaner itself, but is also a good paint remover and care must be taken not to spatter the solution against wall surfaces or furniture.

Synthetic detergents have been gaining in popularity in recent years. One of these is an alkyl aryl sulfonate which can be used alone or in simple aqueous solution. In hard-water areas such detergents are performing difficult cleaning jobs with marked favor. Their cleaning action is strong and they must be used with caution. Sometimes powder cleaners are mixed with sulfonate compounds, but vegetable-oil soaps must never be used with them.

Thorough drying of any surface is essential to proper cleaning. Where floor areas are large or have many cracks, power vacuum cleaners replace rinsing-and-drying mops very successfully. Portable machines of this type are available which hold up to 50 gal. of water.

An interesting study of the effect of cleaning solutions on terrazzo was carried out at the National Bureau of Standards in 1944. Terrazzo disks were made with some 76 varieties of marble chips. They were finished with the same care as a good floor surface. Three cleaning solutions were tested; (1) A soda ash; (2) a trisodium phosphate; and (3) a synthetic sulfonate. Cyclic tests consisting of a 30-min. soaking of the detergents in the dish, and drying under high temperature were made until some detrimental tendencies were observed. After 850 cycles, soda-ash solutions proved more harmful than trisodium phosphate and the sulfonate solution displayed no effect.

The deleterious effects noted consisted of the expansion of the crystals of the paste, the scaling of the smooth surface of the colored aggregate, some efflorescence, and a peculiar phenomenon of veining.

Crystallization takes place, forming crystals in the pores or cracks of floors, when powder cleaners, such as trisodium phosphate are not mixed properly in solution. The force of the resulting expansion is destructive and causes chipping. When scaling of the colored chips takes place, the color value of the floor is destroyed. Observations of the samples where veining took place revealed numerous cracks in the surfaces and varying degrees of fragmentation. The disks which showed veining were more porous than others.

Unpainted or untreated concrete floors cannot be cleaned successfully with scrub soaps because a lime soap will form in the pores. However a synthetic or a solution of the polyphosphate variety can be used. Concrete floors should be treated, preferably with a hardening material which will seal the pores. This will inhibit the tendency of the surface to dust or chalk. Likewise it will offer a high resistance to the action of acids, alkalies, or greases. Alkaline cleaners which form crystals when drying should not be used on concrete surfaces.

Floor surfaces of railway buildings not subject to heavy traffic are frequently protected by an anti-slip waterproof wax which is applied following thorough cleaning and drying. This wax provides a tough, resilient, protective coating that minimizes slipperiness. Waxing principally reduces maintenance costs since it leaves a finish that is easily kept bright and attractive with routine sweeping, dust mopping, or vacuuming. Surfaces protected with a good wax are patchable. Worn spots or traffic lanes can be cleaned thoroughly, then finished with new wax to blend with surrounding areas. This saves on the cost of wax and prevents "build up" on little-used areas. Oil-type sweeping compounds should never be used on waxed floors.

Some floors can be overcleaned. This generally happens when excessive bleaching materials are used. In a large eastern air terminal a floor of red Tennessee marble had been so brutally treated it was bleached white. The first persons to walk over the floor after it was cleaned left foot prints. After much experimenting, the floor was actually allowed to remain soiled until cleaning with water brought out the distinctive red coloring. Milder washing after that resulted in a more pleasing and cleaner looking floor.

Many good power scrubbers and waxers are available and their use is common where open areas are to be cleaned or waxed. Labor is a predominate factor in floor cleaning, taking about 90 per cent of the cleaning budget. Since cleaning materials represent so small a percentage of the budget, savings derived from the use of inferior materials will be out of proportion to the damage done to floor surfaces by their use. Continued use will result in unpleasant looking floors, hazardous surfaces, and costly repair bills.

Consult Material Supplier

By A. Walter Hefti

Technical Service Staff,
Wyandotte Chemicals Corporation,
Wyandotte, Mich.

Cleaning methods will vary with the size of the maintenance force and plant. However, regardless of plant size, maintenance cleaning materials should have certain basic properties if they are to make the cleaning operation effective.

Good judgment will usually dictate the proper use of cleaning materials. Under no conditions should strong alkalies be used for general cleaning purposes. A sensible rule-of-thumb is: Can the cleaner be used for hand washing? A cleaner which is safe on human skin is usually safe for general cleaning. In using abrasive type cleaners, care should be taken to avoid harsh materials such as coarse sands which may damage or mar surfaces.

Soap, alone, or combined with improper water-softening materials, will often cause dull, slippery films to accumulate. Likewise, synthetic detergents or wetting agents, although they may be harmless when used alone, will be found less effective for soil removal and general cleaning than compounded detergents.

Compound alkaline cleaners, either all soluble or with mild abrasives, are most commonly used

for maintenance cleaning. A properly balanced compounded detergent will give the advantages of each of its components, yet minimize the objections to the use of these components alone. Thus, for example, when soap is used alone in hard water it may cause films, but when it is used with the correct water-softening alkalies it avoids such films and is more easily rinsed. Soda ash, when used alone, is too alkaline for general cleaning, but when it is "buffered" by other materials, the alkalinity of this effective cleaner can be kept under control.

Obviously, harsh abrasives will injure surfaces to be cleaned. You can usually distinguish soft flaky abrasives from those that are sharp and granular by feeling the difference with your finger tips.

Organic, synthetic detergents are finding increasing favor as a component of compounded cleaners because of their ability to penetrate soil and to rinse off quickly. Hard water has no effect on synthetic detergents and therefore film problems are avoided.

Acid cleaners should be used infrequently in general building maintenance, but these are very useful in removing "flowering" from tile and for removing hard water films.

If your accident rate due to falls is higher than 17 per cent, you should investigate your floor cleaning program. It has already been emphasized that the selection of proper materials, performance, service and preservation of flooring materials is more important than cost in cleaning. The best solution is to place your cleaning problem in the hands of a reputable concern which will give you the benefit of its technical background and experience in helping to select the proper cleaning materials for your floors.

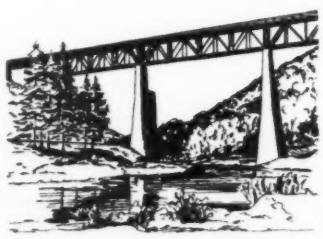
There are, however, three essential points you should keep in mind when buying floor detergents: (1) The flooring construction and the materials to be cleaned; (2) the soil to be removed; and (3) the character and effectiveness of the cleaning material. Flooring materials may be "soft" or "hard." "Soft" floors include linoleum, rubber and asphalt tile, wood and cork. In general these may be cleaned with mild, soluble alkaline cleaners. A minimum of water should be used in cleaning soft floors, since water tends to raise the floor and cause deterioration, swelling and cracking. Organic solvents should also be avoided in cleaning such soft floors as linoleum, because they will break down the resiliency of the floor and cause it to dry out and deteriorate quickly. For the same reason water-emulsion waxes are recommended generally as protective coatings for soft floors.

"Hard" floors, such as concrete, clay or porcelain tile, terrazzo and marble may be cleaned most effectively with mild alkaline solutions. Avoid using acid cleaners on concrete, although rather strong alkaline cleaners may be used on untreated concrete surfaces where heavy soils occur. Any sealed, painted or waxed concrete floor should be treated with milder alkaline cleaners.

Tile, both porcelain and clay, is highly resistant to acid and akaline chemical attack. But the cement in which the tile is laid, unless acid-resistant, may be readily attacked by this chemical. Dulling soap films which often appear on tile floors and walls may be removed with an acid cleaner if such acid-resistant cement is used to join the tiles. For regular maintenance, however, either a mild, soluble, alkaline cleaner or a mildly alkaline cleaner is recommended. Both marble and terrazzo are attacked by acid and should be cleaned with a very mild abrasive cleaner that is soft and flaky to prevent scratching or chipping.

For cleaning large floor areas, powered machines are often desirable and economical, since they save time and do a more thorough cleaning job than other methods of application. When soil is particularly heavy on hard floors like concrete, mild metal cleaners containing silicates, phosphates and synthetic detergents may be used with pressure equipment.

Marble terrazzo and tile floors can either be mopped or scrubbed. In the mopping method, floors should be swept free of loose soil prior to mopping. Chemicals used for the cleaning job must be of the mild alkaline or neutral type. Average concentrations are from 1 to 2 oz. per gal. of warm water. The use of the two-mop system is highly recommended. This gives the advantage of having a clean mop for rinsing. A slightly rounded squeegee is often used to gather the soiled wash solution to a central point, then it is picked up with a wash mop prior to rinsing the floor. This method produces a clean, film-free and safe floor.



Scrubbing calls for the use of brushes or a mop and an abrasive detergent on a floor that is heavily soiled. Cleaning materials used can be of the mild alkaline or neutral type, but for top results an abrasive detergent that does not mar these highly polished floors is much more desirable. Floors should be swept before scrubbing.

When scrubbing with a machine, the abrasive detergent is either sprinkled on the wet floor manually or dispensed automatically. After the scrubbing operation is finished, the dirty cleaning solution must be picked up either by a mop or by the squeegee and lifted on the large machine. That is followed by a good rinse so as not to leave any dirty cleaning solution on the floor.

Scrubbing with a mop can be accomplished by using an abrasive detergent which should be sprinkled on the wet floor. To do a good job the mop should be pushed forward and back rather than from side to side. Following the scrubbing, the dirty cleaning solution should be picked up and then the floor should be rinsed. Well rinsed and film-free floors are beautiful and are safe to walk on.

For cleaning cement floors strictly chemical-type cleaners are recommended. For cleaning cement floors in buildings that contain only normal traffic soil, a mild alkaline cleaner works satisfactorily. The mopping procedure for terrazzo or tile floors may be applied.

For heavily soiled and greasy floors normally found in shops and factories, a heavy-duty alkaline cleaner should be used. In such cases, the cleaning procedure is as follows: (1) Dissolve 4 to 8 oz. of cleaner per gallon of water and pour it on the floor and scrub with a deck brush or scrubbing machine. Rinse with a hose. Cleaning material can also be sprinkled on a wet floor instead of dissolving it beforehand. (2) Some people use high-pressure steam cleaners for cleaning greasy cement floors. If so, use the recommendation of the manufacturer of the machine, as to the concentration of the cleaning solution necessary.

Proper Way to Apply Lock Nuts

In applying jam nuts, such as on switch rods, is it correct to place the thin, lock nut on the rod or bolt first or last? Why?

Many Jam Nuts Misplaced

By Assistant Engineer

Bolts have many uses in railway maintenance-of-way departments. On a great many of them, two nuts are placed, the extra one being used to lock the two together and keep them from working loose. Frequently one of these nuts is thinner than the other and is called a jam nut. All too often, when used on work equipment, roadway machines, or on track fastenings, this jam nut is run on the bolt last and tightened lightly against the larger nut. *This is wrong.* Instead, the thin nut should be placed on the bolt first and tightened lightly against the work, then the thicker nut wrenched tightly against the jam nut.

Why is this the correct method? The best answer to that question was presented a few years ago by the American Institute of Bolt, Nut, and Rivet Manufacturers in its publication, Fasteners. It was pointed out that no locking effect is possible until the pressure exerted by the second nut against the first is greater than the pressure exerted by the first nut against the work. The only way the second nut can exert a greater force than the first is for it to be thicker (have more threads).

"Fasteners" explains it this way. "When the top nut is bearing on the bottom nut with a force greater than the bottom nut bears on the work, the difference between the forces is the load supported by the threads of the bottom nut. This is *downward* against the bolt threads. Since the threads of the top nut are bearing *upward* on the bolt threads, the two nuts are bearing in opposite directions on the bolt threads and therefore are jammed and locked to the threads. This is the only case where locking occurs.

"Another point that should be noted is that the bottom nut need not be tightened severely to produce ultimately a high tension in the bolt. As the top nut is tightened the threads of the bottom nut first bear upward on the bolt threads, then are free, and finally bear downward on the bolt threads. In this transition, the bolt must be stretched sufficiently to reverse the thread contact. This stretching of the bolt through the bottom nut involves a proportionate increase in the bolt tension depending upon the looseness of thread fit of the bottom nut. The final bolt tension therefore is higher than that originally set up by the bottom nut. In fact, the tension may be higher than could be sustained by the bottom nut alone since most of the tension is now being supported by the thick top nut.

"Conclusions from the above are that the bottom nut should be the thin or jam nut, and it should not have a tight thread fit if maximum bolt tension is desired. In assembly, the thin bottom nut should be put on with only a moderate torque and the thick top nut should then be wrenched on tightly with the full torque that the bolt can stand. In order to accomplish this full wrenching of the top nut, the bottom nut should be held from turning since the frictional resistance between the nuts may then be greater than that between the bottom nut and the work."

Water Needs of Stationary Generators

How do the quality requirements of water for stationary, automatic steam generators differ from those used on diesel locomotives? Why? What treatments are suitable for the stationary generators? Explain.

Needs Same, Methods Differ

By R. A. Bardwell
Engineer of Tests,
Chicago & Eastern Illinois, Danville, Ill.

Although the same high quality of water is desired for stationary automatic steam generators as for those on diesel locomotives, the water treatment, including the elimination of scale and corrosion, may be accomplished in a slightly different manner.

For stationary steam generators, an opportunity is afforded to select the best treatment to produce adequate quality of water for the individual generator, because the original water supply from a single source is more uniform than that taken from various sources as it is on diesel units.

Smaller flow rates with more uniformity of use will afford an opportunity to install plant or proportioning equipment which will not be out of proportion to consumption, thus producing a better water quality for stationary generators which is not economically possible for the quick fill-up of small storage tanks on diesels. More space is available for individual treating-plant arrangements at steam-generator locations than on diesel units.

Elimination of maintenance is one of the main factors for installing these compact generators. There may be no definite maintenance schedule as is required on diesel units, and possibly no maintenance personnel available. These facts stress the importance of proper water quality even more so than on diesels, which often have spare units available.

As to the question of treatments that are suitable for stationary generators, it must be pointed out that proper control of chemicals is necessary in all cases, and proper after-treatment is needed with zeolite and demineralizing plants to prevent corrosion.

Demineralizer or zeolite plants furnish the most favorable treatments. With use of a small storage tank, because of lower supply rates, very small units may be used, depending upon desired time between regenerations.

With space available, individual proportioning of complete internal treatment makes this type more favorable than on diesels. As with diesels, potassium carbonate will work best, due to high solubility, and will eliminate silica scale formation which occurs readily with this high rate of heat transfer. If generators are not of the continuous-coil type, as on most diesels, soda-ash treatment may be successful with certain types of waters. Addition of small amounts of antifoam, tannins, and sometimes sodium phosphate, add to the success of proprietary compounds of potassium and sodium carbonate.

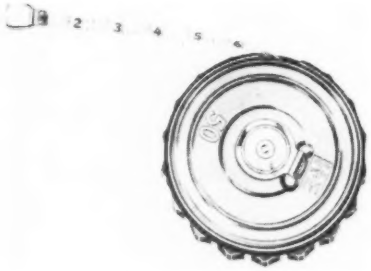
PRODUCTS OF MANUFACTURERS

New, improved equipment, materials, devices

(For additional information on any of the products described in these columns, use postcards, page 463)

MEASURING TAPE

A STEEL measuring tape called "Boss Wyteface," with black markings on a white background and with the foot markings in red, has been announced by the Keuffel & Esser Co., Hoboken, N. J. New



features of interest to constant users of tapes include a wide sweeping reel-like winding handle and notched finger grips convenient for working in all-weather conditions, around the edge of the all-metal case.

FIRE-RETARDING COATING FOR VERTICAL SURFACES

THE Zone Company, a division of Southwestern Petroleum Company, Fort Worth, Tex., has announced a new product, called Fireplate, which, under extreme heat, is said to "stay put" on vertical wood surfaces and to release fire-smothering gases. Evolved primarily as an economical method of protecting upright bridge timbers from grass fires, Fireplate is also suitable for use on telephone and telegraph poles and fence posts.

This new fire-retardant product is a combination of bituminous materials to which has been added a jelling agent (to minimize melting), fire-retardant chemicals, a non-inflammable solvent, a plasticizer which in itself puts out fire, and asbestos, all of which are said to form an incombustible mat over any surface to which applied.

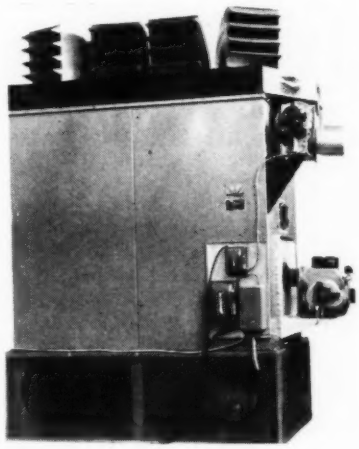
According to the manufacturer, the coating provides fire protection the moment it is applied, primarily because the solvent used is incombustible. Should a fire contact freshly applied Fireplate, this solvent vaporizes quickly and combines with the gases given off by the fire-retardant chemicals which are decomposed by the heat. This combination of gases is said to smother the fire.

Fireplate is easy to apply by brush or spray methods and is furnished in 30-gal. or 55-gal. drums, or in 5-gal. pails.

By adding Fireplate to its previously developed Libbey-Zone process now being widely used by railroads to protect the decks of bridges and trestles from fires caused by red-hot brake shoe fragments, the Zone Company now offers coatings for the complete fire protection of wood railway bridges.

UNIT HEATER FOR LARGE AREAS

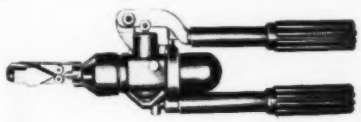
A NEW model Thermobloc unit heater, capable of producing 2 million B.t.u. per hour, has recently been announced by the Thermobloc Division of the Prat-Daniel Corporation, South Norwalk, Conn. The new model—designed for large industrial applications—is said to be capable of heating an area of from 16,000 to 24,000 sq. ft. Designated Model 2000, this unit has twin heat exchangers arranged in the form of a "V", which design is said to result in maximum scrubbing of the heating surfaces by the air passing through. Discharge of heated air is from diffusers which, to pin-point control of air throw, can be rotated 360 deg. If desired single ducts may be run from any outlet to adjoining rooms. The Model 2000 may also be used as a central heating plant, in which case a plenum chamber is supplied in place of the four diffusers. The normal air output is 22,000 c.f.m., and the air intake velocity is 440 ft. per min. The fan is powered by a 10-hp. motor. The unit can use either light fuel oil, with a pressure atomizing gun-type burner; heavy oil, using a horizontal rotary cup



burner; or gas, using a power burner. It may also be equipped with a combination burner for instantaneous conversion of gas to oil or vice versa.

GUILLOTINE CUTTER SNIPS REINFORCING RODS

THE MANCO Manufacturing Company, Bradley, Ill., has announced the production of the new Model 200-A Guillotine Hydraulic Cutter which is said to cut reinforcing rods up to ½-in. in diam-



eter with ease. This model weighs 12 lb. and is 21 in. long. It is claimed that a pressure of 8500 p.s.i. is exerted in the hydraulic cylinder, which is equivalent to a thrust of 10 tons at the cutter. The tool has a newly designed dual-ratio pump which combines rapid traverse with high power to minimize cutting time.

"Bill" . . . "I WANT TO RIDE READE'S SPRAY TRAIN THIS YEAR"

"I can't get away today (Monday) but I would like to later in the week."

CHIEF CLERK: "Let me know when."

●

M. ENGINEER: (Friday) *"Locate Reade's Spray Train—I want to ride it tomorrow."*

CHIEF CLERK: "The Reade train was handed over to the XX R.R. at 3 PM today. They are all through."

M. ENGINEER: *"WHAT? Five hundred miles in five days! Those boys really step along. As I recall it last year, the other outfit fooled around for nearly three weeks."*

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●

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THE MONTH'S NEWS

Happenings among the railways — the associations — the suppliers

General

A. Paul Shelton, bridge and building supervisor on the Southern, has been appointed assistant trainmaster with headquarters as before at Atlanta, Ga.

G. C. Vaughan, assistant superintendent of the Southwestern division of the Pennsylvania, and an engineer by train-

G. C. Vaughan

ing and experience, has recently been appointed superintendent of the Panhandle division at Pittsburgh, Pa.

Mr. Vaughan was born at Washington, D.C., and entered the service of the Pennsylvania as an assistant on the engineering corps at Philadelphia, Pa., in 1930, following graduation from Lehigh University. In 1946 he was promoted to division engineer of the Williamsport division, later transferring to the Pittsburgh division. He was advanced to assistant superintendent of the Southwestern division on July 1, 1951.

Engineering

C. N. Billings has been appointed assistant to chief engineer of the Texas & New Orleans (Southern Pacific Lines in Texas and Louisiana) with headquarters at Houston, Tex.

Ralph H. Gunter, draftsman in the chief engineer's office of the Louisville & Nashville at Louisville, Ky., has been promoted to assistant engineer in the same office.

Archibald D. Duffie, assistant designing engineer on the New York Central, has been promoted to designing engineer with headquarters as before at New York, to succeed the late **Thomas J. Jaynes.**

J. L. Hughes, assistant supervisor of bridges and buildings on the River division of the New York Central, has been appointed assistant engineer on that division, with headquarters as before at Weehawken, N. J.

A. W. B. Fish, roadmaster on the Canadian Pacific at Consul, Sask., has been appointed division engineer at Lethbridge Alta.

J. D. Anderson has been appointed special engineer in the maintenance-of-way department of the Prairie and Pacific regions of the Canadian Pacific at Montreal, Que. He succeeds **J. M. MacBride,** who has resigned after 13 years of service. Mr. Anderson, a native of Vancouver, B.C. received his higher education at the University of British Columbia and the

J. D. Anderson

University of Washington. He worked several summers as a transitman at Penticton, B.C., and in 1948 was appointed assistant engineer at Vancouver. In 1951 he was transferred to the chief engineer's office at Montreal, where he served as assistant engineer up to the time of his recent promotion.

M. R. Haynes has been appointed valuation and tax engineer on the Southern Pacific with headquarters at San Francisco. **E. J. Allen** has been named assistant valuation engineer succeeding **C. R. Tinkler,** who has been promoted to valuation officer (R.E.&M., February, p. 162).

Mr. Haynes joined the Southern Pacific in 1917 as a draftsman in the valuation department, and in February 1928 was appointed valuation engineer, the position he held prior to his recent appointment.

Mr. Allen began his railroad career in 1913 as a rodman, chainman and instrument man for the Northwestern Pacific. He entered the service of the Southern Pacific's valuation department in 1917 and has held the position of assistant engineer since 1921.

C. H. Wiggins, assistant roadmaster on the Carolina division of the Seaboard Air Line, with headquarters at Savannah, Ga., has been promoted to assistant division engineer on the North Florida division at Miami, Fla.

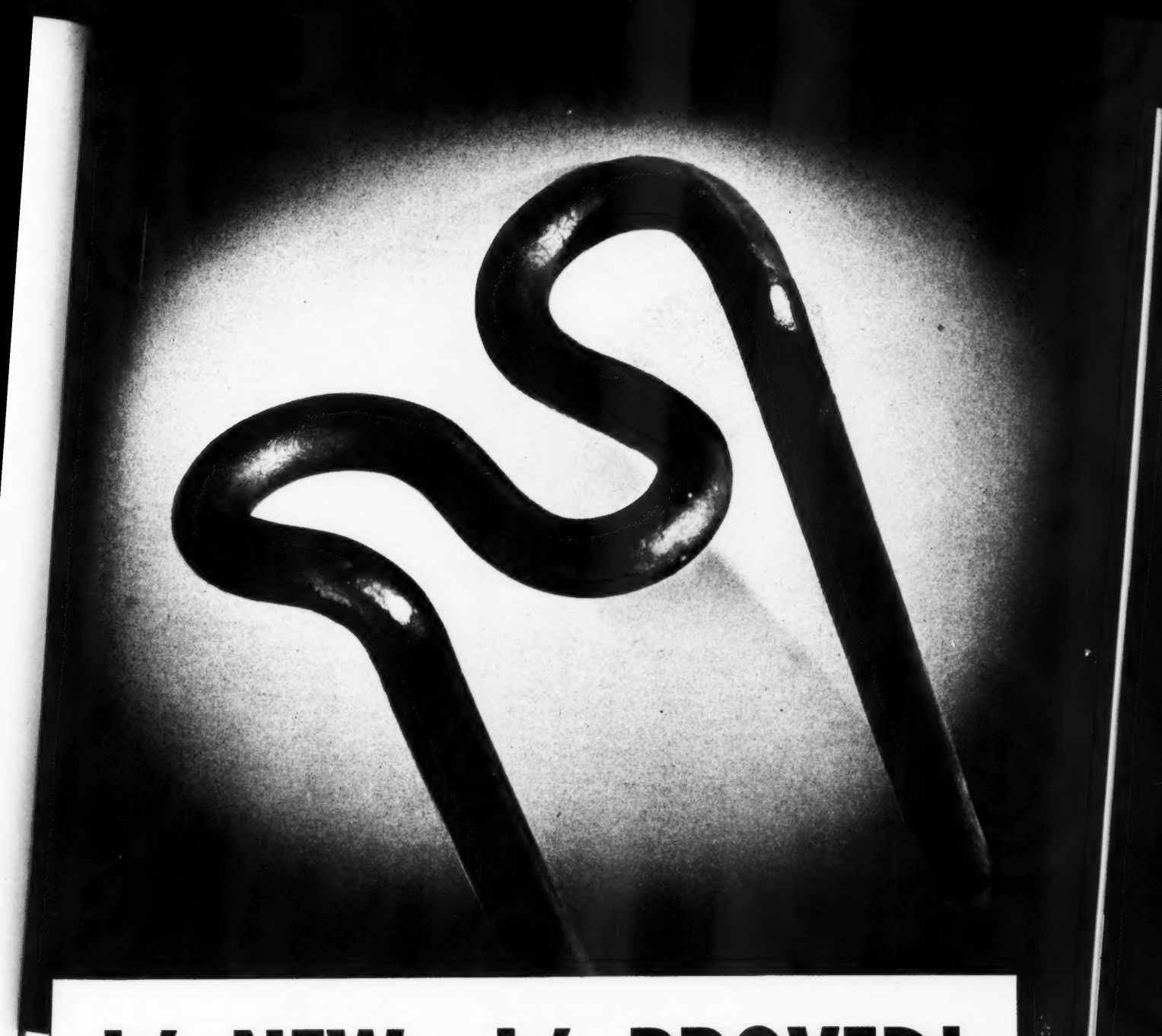
John S. McCauley has been appointed division engineer of the San Joaquin division of the Southern Pacific at Bakersfield, Cal., succeeding **E. E. Earl,** who has been assigned to other duties. **Bernard G. Gallacher** has been appointed senior assistant division engineer at Tucson, Ariz., succeeding **A. L. McHenry,** who has been assigned to other duties. **James G. Sinclair** has been appointed senior assistant engineer of the San Joaquin division at Bakersfield, Cal.

J. H. Sawyer, Jr., has been appointed assistant chief engineer of the Chicago Great Western, with headquarters at Chicago. A graduate of North Carolina State College and Massachusetts Institute of Technology, he began his railroad career in the bridge department of the South-

J. H. Sawyer, Jr.

ern in 1946. He was appointed bridge engineer for the Great Western in 1950, holding this position until his recent appointment.

(*Continued on page* 508)



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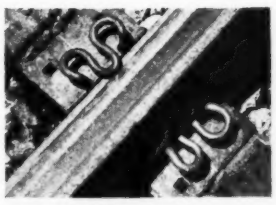

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Railway Personned (Cont'd)

Joseph D. Free, whose appointment as division engineer on the Atlantic Coast Line at Jacksonville, Fla., was announced in the March issue, was born at Bamberg, S.C., on July 13, 1915, and was graduated in civil engineering from the University of South Carolina in 1935. Entering the service of the Coast Line as a junior engineer at Wilmington, N.C., on January 1, 1944, Mr. Free was advanced to assistant engineer on January 1, 1945. The following January he was transferred to Atlanta, Ga., as senior assistant engineer, and on January 1, 1948, was appointed office engineer at Atlanta. He was serving in the latter capacity at the time of his recent promotion.

Joseph D. Free

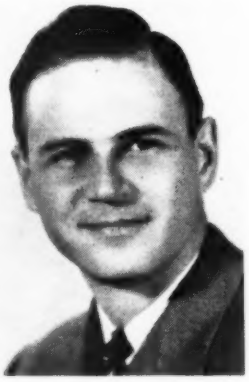
John L. Chafin, assistant engineer on the Louisville & Nashville at Louisville, Ky., has been promoted to assistant supervisor of bridges and buildings on the Knoxville & Atlanta division at Knoxville, Tenn.

W. G. Nusz, office engineer in the office of the vice-president and chief engineer of the Illinois Central has retired after more than 50 years of service. Mr. Nusz is succeeded by **Alan L. Sams,** engineer of design at Chicago, and **Dan S. Bechly,** designer in the bridge department at Chicago, has been appointed engineer of design, succeeding Mr. Sams.

Mr. Nusz was born on April 1, 1882, at Shepherdsville, Ky., and received his higher education at Princeton College, Bryant & Stratton Business College and from the International Correspondence Schools. He entered the service of the Illinois Central on September 1, 1901, as an engineering apprentice after which he served as a chainman on the Louisiana division until June 1, 1903. From the latter date until May 15, 1904, he served as a rodman on the Chicago division. He was then appointed assistant engineer in which capacity he served on the Mississippi, Omaha and Tennessee divisions until June 1, 1906. Mr. Nusz was promoted to chief draftsman on the latter date and on August 1, 1907, became assistant engineer on the Chicago division. From June 27, 1913, until October 26, 1914, he worked on the grade reduction project at Mattoon, Ill., after which he was named assistant engineer valuation at Chicago. He was in charge of the preliminary survey of the line between Nashville, Tenn., and Chatanooga until April 1, 1918, when he was promoted to assistant engineer in the chief corporate engineer's office. From April 1, 1920, until May 1, 1938, Mr. Nusz worked on the electrification of the Chicago terminal and on the latter date was appointed assistant engineer in the chief engineer's office at Chicago. He was named office engineer on August 1, 1943, the position he held until his recent retirement on April 30, 1952.

W. G. Nusz

Mr. Sams was born at Brownsville, Ohio, on July 9, 1917 and was graduated from Purdue University in 1941. In June of the latter year he entered the service of the Illinois Central as a chainman on the Springfield division. He subsequently served as rodman, assistant supervisor of track, supervisor of track, and trainmaster on the Illinois, Kentucky and Vicksburg divisions until January 15, 1946, when he was promoted to assistant engineer in the chief engineer's office at Chicago. On August 1, 1949, Mr. Sams was named assistant engineer of design and on August 1, 1949, he became assistant engineer of design. On April 1, 1950, he was promoted to engineer of design, the position he held prior to his promotion to office engineer on April 30, 1952.



Alan L. Sams

Mr. Bechly was born at Watseka, Ill., July 23, 1922, and graduated from the University of Illinois in 1943. He entered the service of the Illinois Central as a draftsman in the bridge department at Chicago in September 1944 where he remained until July 1949 when he was transferred to Cairo, Ill., where he served as railroad resident engineer on the reconstruction of the Cairo bridge across the Ohio river. On February 22, 1952, he returned to Chicago as a designer in the bridge department, the position he held prior to his recent promotion to engineer of design.

Changes on the New York Central

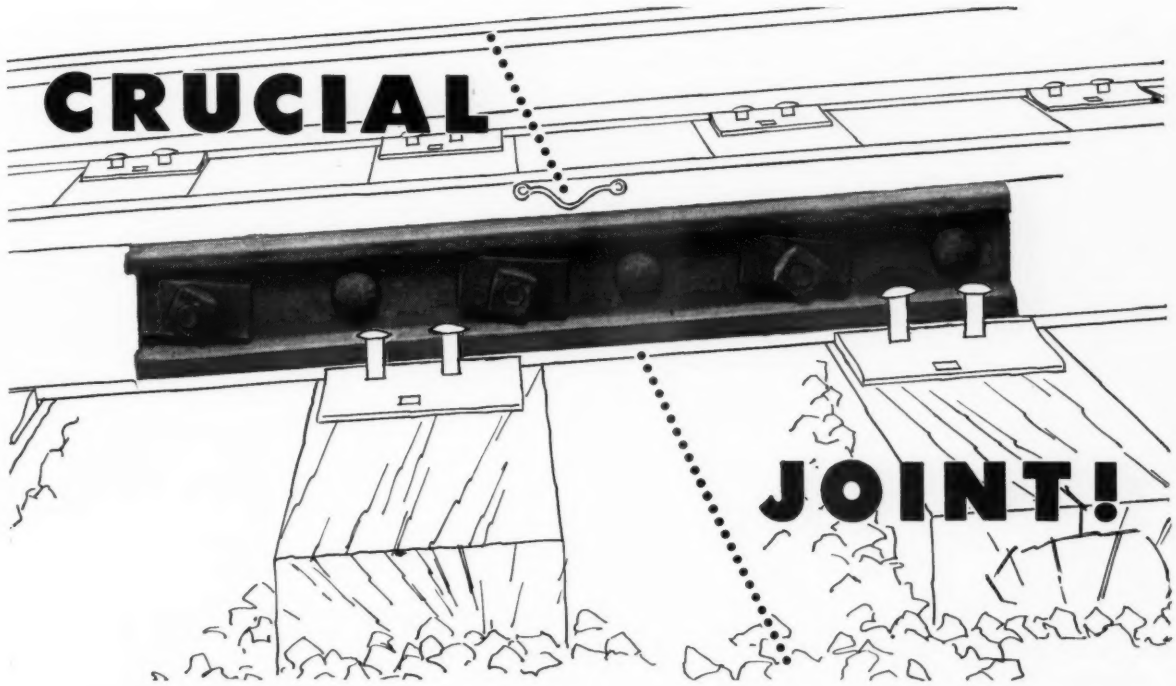
Foster H. Simpson, engineer maintenance of way, New York Central, Lines West of Buffalo, has been appointed chief engineer at Chicago, succeeding **Edward A. Dougherty,** whose death was recently announced (R.E.&M., April, p. 422). Other recent changes include the following promotions: **F. A. Hess,** from assistant to the vice-president at Chicago to assistant chief engineer, Lines West, Indiana Harbor Belt and Chicago River & Indiana, at Chicago; **J. F. McCook,** from division engineer at Chicago to assistant to vice-president at the same point; **G. W. Deblin,** from assistant division engineer at Detroit to division engineer at Chicago; and **R. K. Pattison** to assistant division engineer, Detroit division.

Mr. Simpson, who now has jurisdiction of the Lines West of Buffalo, including the Indiana Harbor Belt and Chicago River & Indiana, was born at Fulton, N. Y., in 1893, graduated from Rensselaer Polytechnic Institute in 1915, and joined the New York Central that year as a rodman at Poughkeepsie, N. Y. After serving with the army in France from 1917 to 1919, he rejoined the road as assistant resident engineer. In 1937 he was promoted to assistant engineer and in 1939 was made assistant district engineer at Detroit, Mich. He served in the same capacity at Cleveland, Ohio, in 1942 and in 1943, until transferred to Chicago as assistant chief engineer in the latter year. In 1947 he was appointed engineer maintenance of way.

Foster H. Simpson

Mr. Hess, a native of Chicago, was

(*Continued on page* 510)



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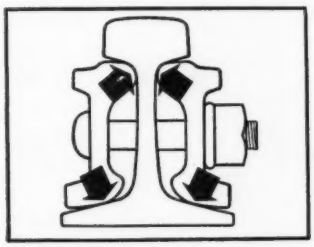

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graduated from the Armour Institute of Technology and has spent his entire railroad career in the Chicago area. His first railroad post was with the Chicago River & Indiana as a junior engineer in 1923. He was appointed draftsman in 1929 and assistant engineer in 1933. In 1937 he was promoted to chief draftsman and in 1939 was appointed assistant engineer in the vice-president's office. In 1943 he was appointed assistant to general manager of the Indiana Harbor Belt and Chicago River & Indiana and in 1944 was named division engineer of those roads. On January 1, 1951, he was promoted to assistant to vice-president of the New York Central.

F. A. Hess

Mr. McCook, a native of Brooklyn, N. Y., attended Columbia University and joined the New York Central in 1924 as a junior engineer in New York. From 1925 to 1934 and again in 1937 he served as an engineer on the west side improvement project in New York. From 1934 to 1936 he was an engineer on the grade crossing elimination project at Syracuse, N. Y. In 1941 he worked on the crossing elimination project at Herkimer, N. Y., and in 1943 was transferred to Cleveland

J. F. McCook

to supervise construction at the Coal dock and Dilly Road locomotive facility. Mr. McCook became assistant division engineer at Chicago in 1945 and division engineer at Detroit in 1946. He was appointed division engineer at Chicago in 1948.

Changes on the North Western

E. C. Vandenburgh, chief engineer of the Chicago & North Western, with headquarters at Chicago, has retired after 44 years of service. He has been succeeded by **B. R. Meyers,** assistant chief engineer. Other changes include the promotion of **L. R. Lamport,** from engineer of maintenance to the newly created position of chief engineer of maintenance; **P. V. Thelander** from assistant engineer of maintenance to assistant chief engineer; **W. H. Huffman** from division engineer to the Wisconsin division to assistant to chief engineer; **H. W. Jensen** from assistant to chief engineer to assistant engineer of maintenance; and **J. L. Perrier** from principal assistant engineer to division engineer, Wisconsin division. All have headquarters at Chicago.

Mr. Vandenburgh, a native of Audubon, Iowa, and an engineering graduate of Iowa State College, began his railroad career in 1906 when he worked on the Rock Island during school vacation. Immediately after graduation from Iowa State in 1908 he became associated with the North Western as a tapeman at Winona, Minn., subsequently working on

E. C. Vandenburgh

various construction and maintenance projects in Minnesota, South Dakota and Michigan. In 1912 he became signal inspector in Chicago where by 1914 he had risen to the position of chief draftsman. In 1914 he was appointed assistant engineer on railway and signal construction, four years later becoming assistant general bridge inspector. In 1924 Mr. Vandenburgh went to Madison, Wis., as supervisor of bridges and buildings, and seven years later was appointed division engineer at Sioux City, Iowa. In 1940 he returned to Chicago where he was promoted to engineer of maintenance, being promoted again in 1946 to chief engineer.

Mr. Meyers, a native of Boone, Iowa, was graduated from Iowa State College with a Bachelor's degree in Civil Engineering in 1925. He began his railroad career in 1918 as a member of a North Western bridge crew. Immediately after graduation from Iowa State he joined the staff of the Rock Island, serving for 2½ years on various engineering projects in Chicago, Oklahoma and Kansas. In 1929 he returned to Iowa as an instrumentman for the North Western at Boone, and a year later was appointed assistant general bridge inspector at Chicago, which position he held till late in 1936 when he was appointed assistant engineer at Sioux City, Iowa. In 1939 he left the engineering department and successively served as assistant trainmaster at Madison, Wis., and trainmaster at Mason City, Iowa, and Council Bluffs. In 1945 Mr.

B. R. Meyers

Meyers returned to the engineering department as office engineer and assistant to chief engineer at Chicago, and in 1948 was promoted to assistant chief engineer.

A native of Chicago, Mr. Lamport became associated with the North Western during school vacations while working for his civil engineering degree which he received from the University of Illinois in 1923. From 1920 up till 1925 he served as tapeman, rodman and instrumentman in South Dakota, Wyoming, northern Michigan and Nebraska. He left the service of the North Western to serve as a

L. R. Lamport

rodman on the Illinois Central where he remained until 1927 when he re-entered the service of the North Western as a

construction accountant in Chicago. Since 1927 Mr. Lamport has served as assistant engineer, supervisor of work equipment, division engineer at Sioux City, and assistant to chief engineer. In 1946 he was promoted to engineer of maintenance for the system, the position he held prior to his recent promotion.

Mr. Thelander, a native of Elgin, Ill., obtained his formal engineering education at Armour Institute of Technology and the University of Illinois. His railroad experience began in 1911 when he served as a rodman with the Mt. Hood and the Petaluma & Santa Rosa. He came to the North Western in 1913 as a rod-

P. V. Thelander

man, and in subsequent years served as an instrumentman for the road at Ashland, Wis., and for the Milwaukee at Chicago and the Nickel Plate at Cleveland. During World War I he served in the Corps of Engineers of the U. S. Army, returning to the North Western in 1919. Since that time he served as instrumentman and computor, assistant engineer, division engineer at Escanaba, Mich., and Chicago. In 1947 he was promoted to assistant engineer of maintenance.

Mr. Huffman was born in Pierre, S. D., and received his Bachelor's and Master's degrees in civil engineering from Purdue

W. H. Huffman

University. He came to the North Western in 1929 for summer work while still

(*Continued on page* 512)

Railway Personnel (Cont'd)

attending the university, serving as a rodman in Wisconsin. After graduation he served as rodman at Escanaba, Mich., and Madison, Wis., after which he served successively as instrumentman at Madison, engineer accountant at Chicago, assistant engineer at Sioux City, Iowa, and division engineer at St. Paul and Escanaba. In 1948 he was appointed division engineer of the Wisconsin division with headquarters in Chicago.

Mr. Jensen, a native of McHenry, Ill., and a graduate engineer of the University of Wisconsin, entered the service of the North Western as a rodman in 1925. He served successively as inspector, instrument man, assistant general bridge inspector, assistant construction accountant, assistant roadmaster, assistant engineer

H. W. Jensen

and division engineer, leaving the railroad in 1944 for two years of service with the Armed forces. He returned to the North Western in 1946 as office engineer, was later appointed division engineer, and in 1948 was promoted to assistant to chief engineer.

Mr. Perrier, a native of St. Paul, Minn., received his formal engineering education at the College of St. Thomas and

J. L. Perrier

the Illinois Institute of Technology. He started his railroad career with the Soo Line as a tapeman in Minneapolis, going

to the North Western in St. Paul a few years later as inspector and then returning to the Soo Line as a rodman. In 1942 Mr. Perrier returned to the North Western as an instrumentman at St. Paul, and they served the road as assistant engineer and office engineer until 1948 when he was appointed principal assistant engineer.

Track

Wayne Claassen has been appointed supervisor of track on the Illinois Central at Champaign, Ill., succeeding **F. F. Denton,** who has resigned.

Robert E. Eader, supervisor of maintenance of way on the Baltimore & Ohio at Mt. Airy, Md., has retired after 50 years of service.

Marcel H. LaRouche, supervisor of track on the New York Central at Albany, N. Y., has retired after more than 42 years of service.

L. P. Bertrand has been appointed roadmaster on the Ste. Agathe and St. Line subdivisions of the Canadian Pacific with headquarters at Ste. Therese, Que., to succeed **J. Guilbert,** who has retired.

Thomas C. Cobble, section foreman on the Southern at Knoxville, Tenn., has been promoted to assistant supervisor of track at Clinton, Tenn., and **Denham H. Phillips,** section foreman at Atlanta, Ga., has been advanced to assistant supervisor of track at Knoxville.

Alexander Katrusiak, roadmaster on the Canadian Pacific at Regina, Sask., has been transferred to Saskatoon, Sask., to succeed the late **I. R. Ljungdren. D. A. Fraser,** relieving roadmaster out of Sutherland, Sask., has been promoted to roadmaster at Wilkie, Sask., to replace **O. A. Larson,** who has been transferred to Regina to succeed Mr. Katrusiak.

George S. Baron, who has been appointed supervisor of track on the Southern at Laurel, Miss., as noted in the April issue, was born at Cincinnati, Ohio, on March 8, 1922. Entering the service of the Southern as a rodman at Cincinnati on November 1947, Mr. Baron did cooperative work in conjunction with the engineering course at the University of Cincinnati until his graduation in civil engineering in June 1949. He was then appointed student apprentice, and in January 1950 was advanced to assistant supervisor of track, at Cincinnati. He was serving in the latter capacity when he received his recent promotion.

John W. Staley, who has been appointed supervisor of track on the Southern at Cochran, Ga., as announced in the April issue, was born at Chattanooga, Tenn., on November 26, 1925. He began service with the Southern as a freighthouse laborer at Alexandria, Va., in July 1947. Following graduation from the University of Kentucky with the degree of Bachelor of Science in civil engineering in January 1950, Mr. Staley was appointed student apprentice at States-

(*Continued on page* 514)

Railway Personnel (Cont'd)

ville, N. C. In January 1951 he was promoted to assistant supervisor of track at Statesville, and the following month was transferred in that capacity to John Sevier, Tenn., where he remained until his recent appointment.

J. Puzzi, roadmaster on the Canadian Pacific at Lacombe, Alta., has been transferred to Consul, Sask., replacing **A. W. B. Fish,** whose promotion to division engineer at Lethbridge, Alta., is noted elsewhere in these columns. **M. Faller,** relieving roadmaster at Medicine Hat, Alta., has been promoted to roadmaster at Lacombe, succeeding Mr. Puzzi. Mr. Faller started on the section at Acme, Alta. in 1928, was promoted to section foreman in 1929, and was advanced to relieving roadmaster at Medicine Hat in 1948.

Marvin E. Wilson, Jr., whose promotion to supervisor of track on the Southern at Greenwood, S.C., was announced in the April issue, was born at Newberry, S.C., on August 9, 1923, and was graduated from Clemson College with the degree of Bachelor of Science in civil engineering in June 1947. Entering the service of the Southern in May 1948 as a rodman at Charlotte, N.C., Mr. Wilson was promoted to assistant supervisor of track at Greenwood in July 1950. The following January he was transferred in that capacity to Columbia, S.C., where he remained until his recent appointment.

H. F. Long, assistant supervisor on the Eastern division of the Pennsylvania, has been promoted to supervisor on the Columbus division at Columbus, Ohio, succeeding **J. H. Nolf, Jr. G. E. Ellis,** junior supervisor on the Chicago division, has been promoted to assistant supervisor of track on the Columbus division at Columbus, succeeding **F. N. White. W. J. Nicholl, Jr.,** assistant supervisor of track at New Brunswick, N.J., has been promoted to supervisor of track at Salisbury, Md., to succeed **William Glavin,** who has been transferred to Trenton, N.J. **R. A. Shaw,** assistant supervisor of track at Jamesburg, N.J., has been transferred to replace Mr. Nicholl, and **J. K. Hite,** junior engineer at Huntingdon, Pa., has been advanced to assistant supervisor of track at Jamesburg to succeed Mr. Shaw. **T. C. Netherton,** supervisor of track at Fort Wayne, Ind., has been transferred to Newport, Pa., to replace **L. W. Hogston,** who has been transferred to Huntingdon. **D. D. Rake,** supervisor of track at Columbus, Ind., has been transferred to New Castle, Pa. **M. H. McCully,** supervisor of track at Mt. Morris, N.Y., has been transferred to Mt. Vernon, Ohio. **D. C. Hasbrook,** junior engineer on the Panhandle division, has been advanced to assistant supervisor of track at Aspinwall, Pa.

C. E. Jewell, has been temporarily appointed supervisor of track, Subdivision 23, of the New York Central at Columbus, Ohio, replacing **J. E. Price,** on leave of absence.

Bridge and Building

V. E. Engman, chief carpenter on the Chicago, Milwaukee, St. Paul & Pacific at Savanna, Ill., has retired after 45 years of service. He has been succeeded by **J. E. Collings.**

S. C. Walker, assistant supervisor of structures on the New York division of the Pennsylvania, has been promoted to supervisor of structures on the Chicago division, succeeding **F. D. Day.**

H. G. Moutoux, bridge and building inspector on the River division of the New York Central, has been promoted to assistant supervisor of bridges and buildings on that division with headquarters as before at Weehawken, N.J., to succeed **J. L. Hughes,** whose appointment as assistant engineer at Weehawken is noted elsewhere in these columns under Engineering.

Special

William F. Meaney, principal assistant architect on the Southern Pacific at San Francisco has been appointed chief architect succeeding **L. E. Peyser,** who has retired. **John R. Oyarzo** succeeds Mr. Meaney in the capacity of principal assistant architect.

Mr. Peyser began his railroad career with the Southern Pacific as a draftsman

Lionel E. Peyser

in 1917 and subsequently held positions as designer, architect and principal assistant architect. He was appointed chief architect in 1947, the position he held at the time of his recent retirement.

Obituary

Thomas J. Jaynes, designing engineer on the New York Central at New York, died recently.

W. A. Duff, retired engineer of bridges and roadway on the Canadian National, died recently at the age of 75.

F. C. Seman, supervisor of track on the Erie at Forest Hill, N.J., died recently at the age of 34, after several months of illness.

(*Continued on page* 516)

Railway Personnel (Cont'd)

John H. Davis, assistant to the division engineer on the Illinois Central at Waterloo, Iowa, whose death was announced recently (RE&M, April, p. 416), entered the service of the Illinois Central as a chainman on the Vicksburg division in 1913. After holding various engineering positions on the Louisiana, New Orleans, and Illinois divisions, he transferred to the Iowa division in 1932, and in 1940 was promoted to assistant to the division engineer.

George L. Sitton, assistant to the chief engineer of the Southern at Washington, D.C., died recently after a month's illness at the age of 63. Mr. Sitton, who was born at Anniston, Ala., October 21, 1888, was graduated in civil engineering from the University of Tennessee in 1907. In that year he entered the service of the Southern as a rodman at Knoxville, Tenn., and subsequently served as laborer, transitman, and assistant engineer at Knoxville until 1913 when he was appointed assistant roadmaster at Greenville, S.C. From 1914 until December 1924, he served as roadmaster at Charleston, S.C., and resident engineer maintenance of way at Richmond, Va., after which he was promoted to chief engineer maintenance of way and structures, Eastern lines at Charlotte, N.C. In February 1946, Mr. Sitton was named assistant to the chief engineer with headquarters at Washington.

Mr. Sitton was elected president of the

George L. Sitton

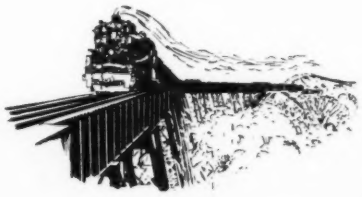
American Railway Engineering Association in 1950, but shortly thereafter was forced to resign his office because of illness. He had served as a director of the association from 1942 until 1945.

Association News

American Railway Engineering Association

At the time of going to press the following committees had scheduled meetings to be held in May: Roadway and Ballast, May 12-13, Tutwiler Hotel, Birmingham, Ala.; Rail, May 14, association headquarters, Chicago; Track, May 7-8, Hershey, Pa.; Wood Bridges and Trestles, May 27-29 (tentative), Ottawa, Ont.; Iron and Steel Structures, April 30-May 1, Detroit, Mich. The committee on Economics of Railway labor has tentatively planned to hold a meeting during May at the association headquarters, Chicago, but at the time of his writing the date had been specified.

By action of the Board of Direction, Committee 25—Waterways and Harbors, which was disbanded in 1947, has been recreated as a regular standing committee of the association. The purpose of this action was two-fold; (1) To permit the review of manual material; and (2) to keep the association informed on matters



of engineering and engineering economics with respect to waterways and harbors. Those who desire appointment to this committee should address their request to the secretary's office.

In addition, the Board of Direction has authorized a change in the name of Committee 13-water Service and Sanitation, to Water, Oil and Sanitation Services.

Chairman of standing and special committees met with President Geyer and members of the Board of Direction on April 28 to discuss in particular matters affecting committee procedures in connection with the proposed reprinting of the manual in 1953. Following that meeting the Board of Direction held a brief special meeting.

Associated Railway Track Contractors of America

At a meeting, on March 10, of the Associated Railway Track Contractors of America, an association formed in 1950 to represent track contractors throughout the United States, the following new officers were elected: T. F. Scholes, Reading, Pa., president and director; John H. Deckert, Chicago, vice-president and director; Charles D. Kelly, St. Louis, Mo., second vice-president and director; Royce Kershaw, Montgomery, Ala., secretary-treasurer and director; T. W. Swanson, Chicago, director; J. F. Slattery, Chicago, assistant treasurer; and Rita Dalby, Chicago, assistant secretary.

Bridge and Building Association

The next meeting of the Executive committee will be held at the Chicago Engineers' Club on Monday, July 21. The primary purpose of this meeting will be to review the committee reports that will have been prepared for presentation at the annual convention in September. In addition, it is expected that final plans for the annual meeting will be arranged.

Maintenance of Way Club of Chicago

The annual meeting of the club was held on the evening of April 28 at Eitel's restaurant in the Field Building, Chicago, beginning with dinner at 6:30 P.M. The principal speaker was C. J. Geyer, vice-president (construction and maintenance of way), Chesapeake district, Chesapeake, Ohio, whose subject was "Management's Views on Maintenance of Way." A rather unusual feature of the meeting was that a considerable number of members of the Board of Direction of the A.R.E.A. as well as chairmen of the standing committees of that association were present, having earlier in the day held a meeting of their own under the direction of Mr. Geyer in his capacity as president of the A.R.E.A.

In the election of officers for the Maintenance of Way Club, L. R. Lamport, chief engineer of maintenance, Chicago & North Western, and first vice-president of the club, was elected president; F. E. Austerman, assistant chief engineer, Chi-

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Association News (Cont'd)

cago Union Station Company, and second vice-president of the club, was advanced to first vice-president; H. B. Christianson, assistant chief engineer, Chicago, Milwaukee, St. Paul & Pacific, Chicago, and a director of the club, was advanced to second vice-president; Merwin H. Dick, editor, *Railway Engineering and Maintenance*, was re-elected executive secretary; and E. C. Patterson, chief clerk, Chicago & North Western, was re-elected secretary-treasurer. In addition, the following were elected directors: C. E. Weller, division engineer, Illinois Central; Robert V. Dangremond, special roadmaster, Elgin, Joliet & Eastern; and Herbert R. Miller, representative, Oxweld Railroad Service Company.

Roadmasters' Association

The Executive committee of the association will hold its next meeting on Monday, May 26, at the Engineers' Club, Chicago. The primary purpose of the meeting will be to review committee reports that will have been prepared for presentation at the convention in September, and also to discuss preliminary plans for that meeting.

Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 15-17, 1952, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

American Railway Engineering Association—Annual Meeting, March 17-19, 1953, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—Next meeting October 27. E. C. Patterson, Secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

National Railway Appliances Association—Robert A. Carr, Secretary, 310 South Michigan avenue, Chicago 4; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Annual meeting, October 22-24, 1952, Jung Hotel, New Orleans, La. Roy M. Edmonds, Secretary-treasurer, 912 Shell Building, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 15-17, 1952, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

Supply Trade News

General

The **Ruffridge-Johnson Equipment Company,** Minneapolis, Minn., has recently been appointed Minnesota distributor for the **Koehring Company.** Ruffridge-Johnson succeeds **Rosholt Equipment Co.,** as the area Koehring representative.

The **Worthington Pump & Machinery Corp.,** Wilmington, Del., announced March 25, that henceforth the name of the organization will be the **Worthington Corporation.** No corporation policies or practices will be affected by the name change.

Personal

John A. Ferguson, sales representative since November 1950 for *Railway Engineering and Maintenance* and other railway magazines published by the **Simmons-Boardman Publishing Corporation,** has been appointed sales representative for the Matisa Equipment Corporation, with headquarters at Chicago.

John A. Ferguson

Carl D. Franks, vice-president, promotion, of the **Portland Cement Association,** has been appointed to the newly created position of executive vice-president at Chicago.

Douglas McHenry, formerly head of the Concrete Laboratory Section of the U. S. Bureau of Reclamation, Denver, Colo., has been appointed administrative assistant to the vice-president for research and development of the **Portland Cement Association,** Chicago.

The **Tapecoat Company,** Evanston, Ill., has recently announced several new appointments augmenting its staff of sales executives. **V. J. Scarola,** formerly in charge of the company's New York office, has been appointed manager of sales with headquarters in Evanston. Other appointees to serve with Mr.

For additional information, use postcard, pages 463-464

Scarola are: **John G. Bolling,** manager of utility sales; **John Walsh,** manager of industrial sales; **Burt Schmidt,** mid-west sales and service; **Jack O'Brien,** western sales, with offices at Denver, Colo.; and **Louis Zito,** eastern sales, with offices in New York.

Ben Bowman, railway sales manager of the **Patterson Sargent Company,** Cleveland, Ohio, has announced that **Don R. Myers** has become associated with the company in a sales capacity with headquarters at Chicago, succeeding **F. W. Evinger** who has resigned to go with the **Lehon Company.**

James M. Gleason, former senior salesman at the Chicago dealership, of the Cummins Diesel Sales Corporation, has been named acting branch manager at Des Moines, Iowa. **L. H. Hanlon** is in charge of the office and parts departments, and **Joseph Boston** heads the service department.

Fred W. Evinger, whose appointment as sales representative for the **Lehon Company** at Chicago, was recently announced (R.E.&M., March, p. 323), was born in Grand Island, Neb., on December 21, 1907. He entered the service of the Union Pacific in 1923 and from 1925 until 1931 served as blueprint and photo-

Fred W. Evinger

stat machine operator and draftsman. From 1931 until 1935 he was associated with the Omaha Welfare Federation & Community Chest, and in the latter year re-entered the service of the Union Pacific as a draftsman. He later rose to the position of bridge and structural draftsman, the position he held when, in June 1944, he resigned to accept a sales position with the Patterson Sargent Company in Chicago. On March 1, 1952, he left Patterson Sargent for his present post with Lehon.

Obituary

Wallace W. Glosser, vice-president and a director of Hubbard & Co., died recently at the age of 65. Mr. Glosser was born in Batavia, N. Y. in 1887, and had been with Hubbard since 1927. Prior to that time he had served with the New York Central, the P. & M. Co. and the Verona Tool Company. He began his career with Hubbard & Co. as district manager of the New York office, and in 1928 was transferred to the Pacific coast as manager of the Pacific Coast plant at Oakland, Cal. Mr. Glosser was appointed vice-president in 1942 and was elected to the board of directors in 1948.

Wallace W. Glosser

Clarence B. Flint, a former vice-president and director of the **National Aluminate Corporation,** Chicago, died suddenly on February 14 at Vero Beach, Fla., where he was vacationing. He retired to semi-active status on January 1, 1951, and served National Aluminate Corporation in a consulting capacity from then until his death.

(*Continued on* page 520)

Supply Trade News (Cont'd)

Born in Portland, Me., on March 18, 1879, Mr. Flint attended high school in Cornish, Me., and was graduated from Bowdoin College, Brunswick, Me., with an A.B. degree in 1901. He spent nearly his entire business life in the railway supply field. He was manager of the Newton Fire Brick Company, Albany, N. Y., from 1902 to 1910, and manager of the supply department of Manning, Maxwell & Moore, Inc., New York, for the next three years. For seven years, 1913-1920, he was president of Flint & Chester, Inc., New York. Became a vice-president and director of the Paige-Jones Chemical Company in 1921 and then joined National Aluminate Corporation as vice-president in 1931 when Paige-Jones was purchased by the latter company. In 1936 he was made a director of National Aluminate. He also served for several years as a vice-president of Visco Products Company, Inc., Houston, a subsidiary of National Aluminate.

Trade Publications

(To obtain copies of any of the publications mentioned in these columns, use postcards, page 463).

Wood Preservative—A four-page leaflet has recently been made available by the Railroad Tie division of the Osmose Wood Preserving Company of Buffalo, N. Y., which describes the advantages and methods of use of Osmoplastic wood preserving compound. Illustrations show application procedure and how the compound may be employed to trestles as well as to ties.

Hydraulic Crane—A new two-color, 24-page illustrated booklet has recently been issued by the Bucyrus-Erie Company, South Milwaukee, Wis. This publication pictorially illustrates the versatility of the Hydrocrane, and shows the machine, equipped with various attachments, working on a variety of jobs including trenching, digging, hoisting and erecting, unloading and stockpiling, cleaning catch basins, removing snow, etc.

Spike Adhesive—The Master Builders Company, Cleveland, Ohio, has recently published a four-page leaflet describing the features of Spike-Grip. The leaflet is composed of text and 12 illustrations which describe the Spike-Grip compound and show how it is used with track spikes. Also included is a complete description and bill of material for a dispenser, which can be constructed with odd pieces of pipe and other materials usually found around the shop.

Tractor Tools—An attractive two-color booklet, designated as Catalog No. 1191, featuring tractor tools for use with Caterpillar-built tractors and equipment has recently been issued by the Hyster Company, Portland, Ore. The six-page pic-

torial and verbal description includes the complete line of Hyster tractor tools and graphically shows practical applications of the equipment to multiply tractor use and production. Included in the literature is the Hystaway excavator-crane; the tractor yarder, winches and donkey; logging arches and sulkys; and the Hyster grid roller for road construction and salvaging bituminous pavement.

Buckets—This is a new 44-page bulletin, designated No. 2392, which the Blaw-Knox Company, Pittsburgh, Pa., has just published on four-rope buckets. One of the features is a list of ten vital items for guidance of the prospective purchaser of a four-rope bucket. There are numerous illustrations of bulk material handling including coal, ores, chemicals, etc., with performance data and comparisons of cargo dispatch and discharging vessels, barges and railroad cars. To provide further assistance to engineers and users, helpful information and diagrams are presented on four-rope bucket types, reeving, arrangement of cables for various types of cranes, cable life as influenced by sheave diameter, and how to determine the increase in payload through use of anti-friction bearings in bucket sheaves.

Small Tractor-Truck—Bulletin KT-3 issued by the Kalamazoo Manufacturing Company, Kalamazoo, Mich., presents a detailed description of Kalamazoo's Kal-Truk. The illustrated booklet shows the Kal-Truk employed on various jobs handling concrete and other materials. Complete specifications are also presented along with scale drawings of the truck equipped with both platform and dump bodies.

Rubber Tie and Abrasion Pads—A four-page booklet recently made available by Railroad Rubber Products, Inc., Ashtabula, Ohio, presents in detail the features of construction and methods of application of Anchor Seal tie pads and Rail Abrasion pads. Photographs showing pad installations and pads removed from service illustrate descriptive text which states the manufacturer's claims and lists the dimensions and composition of the pads.

Curvelining—Designated as data sheet A/18-52, a new folder recently issued by the American Railroad Curvelining Division of R. K. Price Associates, New York, presents an illustrated description of the Curveliner and accessories for use with it. Included in the publication are the manufacturer's recommended practices for measuring the mid-ordinates of curves, computing throws, and lining and stabilizing track.

Valves—A new eight-page bulletin (G-3) describing the features of the companys' cushioned automatic water and steam valves has been made available by the Golden Anderson Valve Specialty Company, Pittsburgh, Pa. Featured in this catalog are float valves, altitude valves, check valves, solenoid-operated valves, reducing valves, relief valves and non-return valves.

Advertisers IN THIS ISSUE

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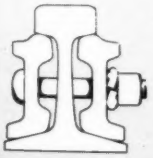

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